Former Levco Metals Finishing Property
Astoria, New York

Final Engineering Report

Prepared for

Kaufman Astoria Studios
Astoria, New York

June 2018

D&B Engineers and Architects, P.C.

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FINAL ENGINEERING REPORT

FORMER LEVCO METALS FINISHING PROPERTY
34-11 36th STREET
QUEENS COUNTY
LONG ISLAND CITY, NEW YORK
NYSDEC VCA NO. V00600-2

Prepared for:

KAUFMAN ASTORIA STUDIOS
34-12 36th STREET
ASTORIA, NEW YORK

Prepared by:

D&B ENGINEERS AND ARCHITECTS, P.C.
330 CROSSWAYS PARK DRIVE
WOODBURY, NEW YORK
(516) 364-9890

JUNE 2018

CERTIFICATIONS

I, Brian M. Veith, P.E., am currently a registered professional engineer licensed by the State of New York, I had primary direct responsibility for implementation of the remedial program activities, and I certify that the July 2010 Remedial Action Work Plan and March 2017, revised September 2017 Soil Characterization Report and Excavation Plan was implemented and that all construction activities were completed in substantial conformance with the Department-approved July 2010 Remedial Action Work Plan and March 2017, revised September 2017 Soil Characterization Report and Excavation Plan.

I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the July 2010 Remedial Action Work Plan and March 2017, revised September 2017 Soil Characterization Report and Excavation Plan and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established for the remedy.

I certify that all use restrictions, Institutional Controls and/or any operation and maintenance requirements applicable to the Site are contained in a deed restriction created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such deed restriction has been recorded.

I certify that a Site Management Plan has been submitted for the continual maintenance of all remaining monitoring wells, and that such plan has been approved by the Department.

I certify that all documents generated in support of this report have been submitted in accordance with the DER's electronic submission protocols and have been accepted by the Department.

I certify that all data generated in support of this report have been submitted in accordance with the Department's electronic data deliverable and have been accepted by the Department.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Brian M. Veith, P.E. of 330 Crossways Park Drive, Woodbury, NY, am certifying as Owner's Designated Site Representative for the site.

071687 — NYS Professional Engineer #

10/25/18 — Date

Brian Veith — Signature

FINAL ENGINEERING REPORT

FORMER LEVCO METALS FINISHING PROPERTY
34-11 36th STREET
QUEENS COUNTY
LONG ISLAND CITY, NEW YORK

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LIST OF ACRONYMS

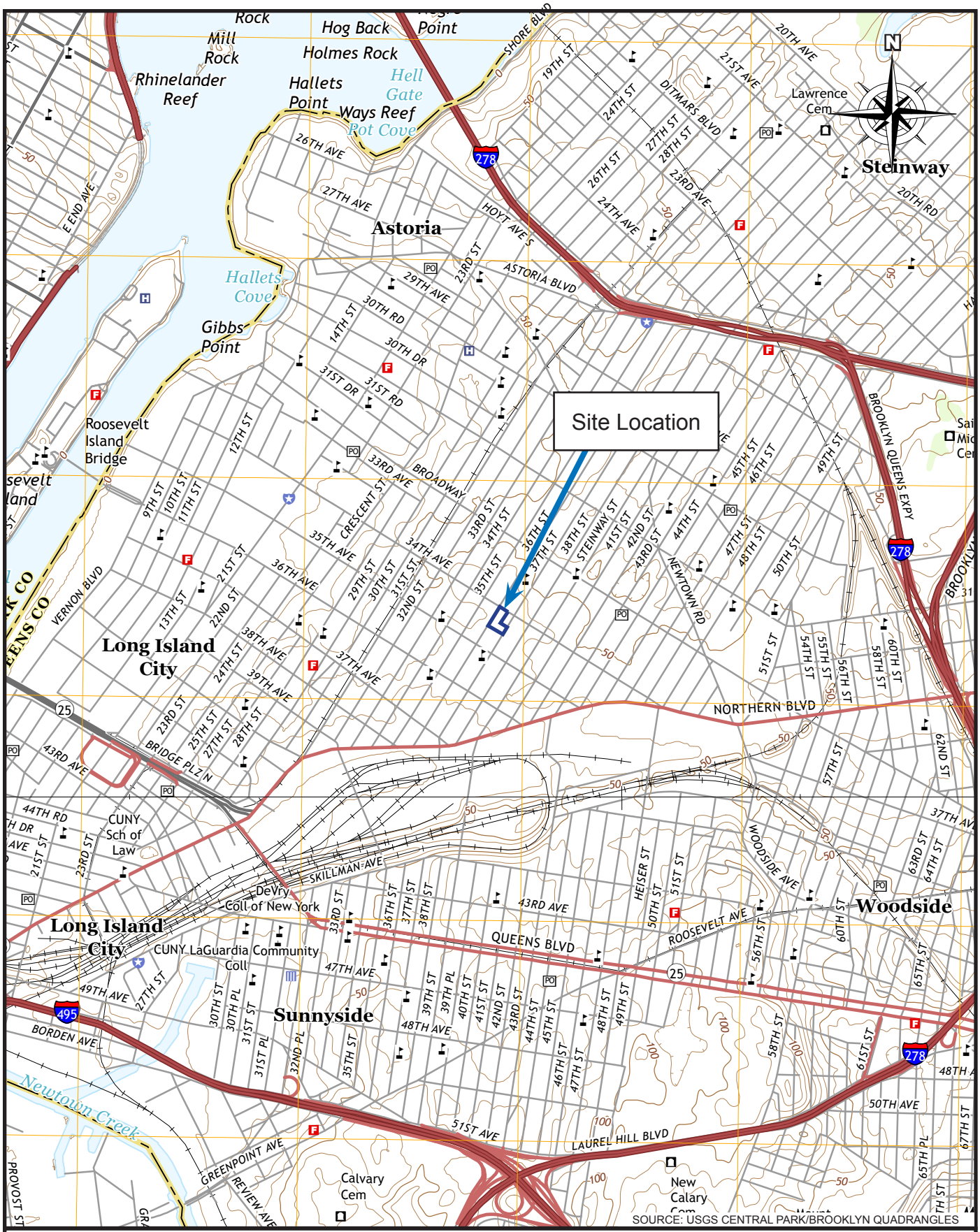
AS	Air Sparging	RAO	Remedial Action Objective
CAMP	Community Air Monitoring Plan	RAWP	Remedial Action Work Plan
CFR	Code of Federal Regulation	RCA	Recycled Concrete Aggregate
CHASP	Construction Health and Safety Plan	RCRA	Resource Conservation and Recovery Act
D&B	D&B Engineers and Architects, P.C.	RTAM	Real-time Aerosol Monitor
DER	Division of Environmental Remediation	S/MMP	Site/Materials Management Plan
DUSR	Data Usability Summary Report	SCG	Standards, Criteria and Guidelines
EC	Engineering Control	SCO	Soil Cleanup Objective
ELAP	Environmental Laboratory Approval Program	SMP	Site Management Plan
EWP	Excavation Work Plan	SOP	Site Operations Plan
FDNY	New York City Fire Department	SVE	Soil Vapor Extraction
FER	Final Engineering Report	SVOC	Semivolatile Organic Compound
Hellenic	Former Hellenic Service Station	TAL	Target Analyte List
HDPE	High Density Polyethylene		
IC	Institutional Control	TCE	Trichloroethene
IRM	Interim Remedial Measure	TCL	Target Compound List
KAS	Kaufman Astoria Studios	TCLP	Toxicity Characteristic Leaching Procedure
Levco	Levco Metals Finishing	USEPA	United States Environmental Protection Agency
MPA	Materials Processing Area	UST	Underground Storage Tank
MS/MSD	Matrix Spike/Matrix Spike Duplicate	VOC	Volatile Organic Compound
MSA	Materials Support Area	VCA	Voluntary Cleanup Agreement
NYCDEP	New York City Department of Environmental Protection	VCP	Voluntary Cleanup Program
NYCDOB	New York City Department of Buildings		
NYS	New York State		
NYSDEC	New York State Department of Environmental Conservation		
NYSDOH	New York State Department of Health		
NYCRR	New York Codes, Rules and Regulations		
PCBs	Polychlorinated Biphenyls		
PID	Photoionization Detector		
QA/QC	Quality Assurance/Quality Control		

1.0 BACKGROUND AND SITE DESCRIPTION

Levco Woodwork Joint Venture (LWJV) entered into a Voluntary Cleanup Agreement (VCA) with the New York State Department of Environmental Conservation (NYSDEC) under the Voluntary Cleanup Program (VCP) in July 2002, to investigate and remediate the former Levco Metals Finishing (Levco) Property (VCP Site No. V00600-2 and Index # W2-0939-02-10), hereinafter referred to as the "Site". The Site is a 0.5-acre property with an address listed in the VCA as 34-11 36th Street, Long Island City, Queens County, New York. A site location map is provided as ***Figure 1-1***. The property was remediated to commercial use, and will be used for film and television production sound stages and related support space (known as Stages O&N), along with one level of below-grade parking. The address for Stages O&N is 34-02 34th Avenue (also known as 36-11 36th Street). The Site has been remediated in accordance with the July 2010 Remedial Action Work Plan (RAWP) and the March 2017, revised September 2017 Pre-Construction Soil Characterization Report and Excavation Plan.

The Site is identified as Block 644, Part of Lot 28 (formerly Lot 43) on the Queens County Tax Map. The "L" shaped parcel is situated on an approximately 22,000 square feet (0.5-acre) area bounded by the former Hellenic Service Station Site (Hellenic Site) on the remaining (and original) portion of Lot 28 (which will also be developed into Stages O&N) followed by 34th Avenue to the north; a Kaufman Astoria Studios (KAS) stage building (Stage K) to the south; 37th Street, storage garages and residential homes to the east; and 36th Street to the west. A Site Plan is provided as ***Figure 1-2***. The boundaries of the Site are fully described in the metes and bounds survey provided in ***Appendix A***. The owner of the Site parcel at the time of issuance of this Final Engineering Report (FER) is Astoria ON Stage, LLC, with an address at 34-12 36th Street, Astoria, New York.

Note that the boundaries of the Site described in ***Appendix A*** were formerly identified as Block 644, Lot 43, but were combined with the adjacent lot to the north (Lot 28), the former Hellenic Service Station Site. This FER focuses on the portion



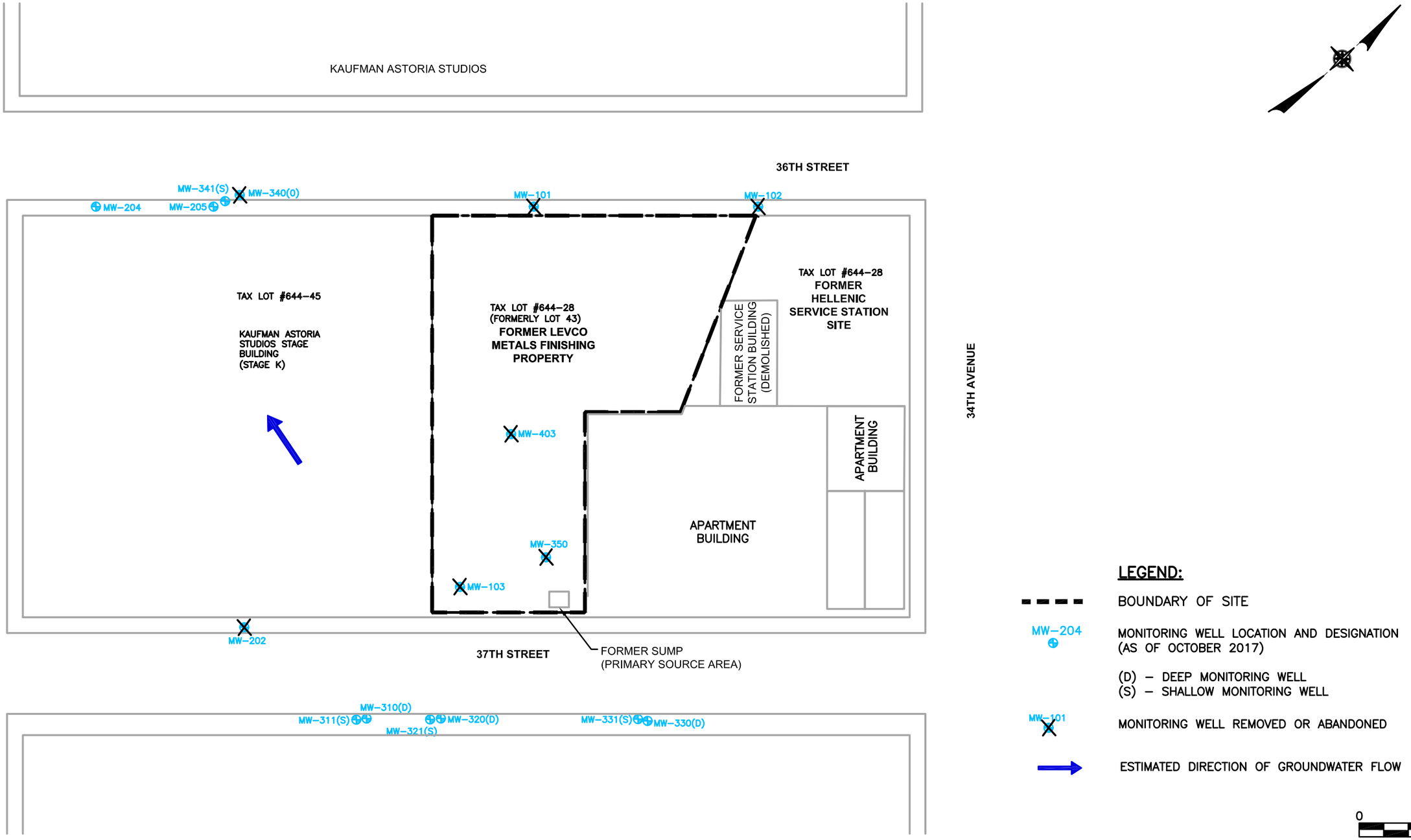
FORMER LEVCO METALS FINISHING SITE
ASTORIA, NEW YORK

0 1,800
SCALE IN FEET

D&B ENGINEERS AND ARCHITECTS, P.C.

SITE LOCATION MAP

FIGURE 1-1



FORMER LEVCO METALS FINISHING

SCALE: 1' = 50'

D&B ENGINEERS AND ARCHITECTS, P.C.

SITE PLAN WITH MONITORING WELL LOCATIONS

FIGURE 1-2

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of Lot 28 which is included in the VCA agreement (i.e. the former Levco Site). Excavation of the Hellenic Site was completed concurrently with the Levco Site as part of the development of Stages O&N, and a summary of the soil excavation and disposal details for the Hellenic Site are included in ***Appendix B***.

This FER was prepared by D&B Engineers and Architects, P.C. (D&B), on behalf of KAS, in accordance with the requirements of the NYSDEC's Division of Environmental Remediation (DER)-10 "Technical Guidance for Site Investigation and Remediation," dated May 2010 and the guidelines provided by the NYSDEC.

An electronic copy of this FER with all supporting documentation is included as ***Appendix C***.

2.0 SUMMARY OF REMEDIAL ACTIONS

2.1 Remedial Action Objectives

Based on the results of the Remedial Investigation, the following Remedial Action Objectives (RAOs) were identified for this Site, as listed in the July 2010 RAWP:

- Prevent migration of site-related contaminants that would result in groundwater contamination and inhalation of contaminants volatilizing from the soil through the removal of contaminated soil above site Standards, Criteria and Guidelines (SCGs).
- Protect on-site workers and the surrounding community from exposure to site-related contaminants during the implementation of the remedy.
- Establish general guidelines for the proper management and disposal of soil, water and other waste that would be generated as part of the implementation of the remedy.
- Establish general guidelines associated with the operation and maintenance of the proposed building to be constructed in order to reduce the potential for future exposure of building occupants and the community to site-related contaminants.

2.2 Description of Selected Remedy

The site was remediated in accordance with the remedy selected by the NYSDEC in the July 2010 RAWP, and revised by the following NYSDEC-approved documents:

- "Pre-Construction Soil Characterization Report and Excavation Plan," dated March 2017 and revised September 2017.
- "Addendum to Excavation Plan for Drilling of Piles," letter dated August 14, 2017.
- "Notification of Modification to Remedial Action Work Plan," letter dated January 25, 2018.

The factors considered during the selection of the remedy are those listed in 6NYCRR 375-1.8. The following are the components of the selected remedy:

1. Excavation of soil/fill exceeding Commercial Use and Protection of Groundwater Soil Cleanup Objectives (SCOs) listed in ***Table 2-1*** to a depth of approximately 15 feet below ground surface as part of the redevelopment of the Site. The removal of an additional two feet of soil to groundwater (from approximately 15 to 17 feet below ground surface) in a 10-foot by 10-foot area centered around both soil boring B-3 and endpoint sample EP-32, based on trichloroethene (TCE) concentrations above the Protection of Groundwater SCO. Soil excavation activities were completed between March 2017 and May 2018.

2. Construction and maintenance of a cover system consisting of the foundation of the new Site building to prevent human exposure to remaining contaminated soil/fill remaining at the Site;

3. Installation of a gas vapor barrier below the foundation of the new Site building.

4. Execution and recording of a Declaration of Covenants and Restrictions, provided as ***Appendix D***, to restrict land use and prevent future exposure to any contamination remaining at the Site.

5. Post-remediation groundwater monitoring;

6. Development and implementation of a Site Management Plan (SMP) for long term management of remaining contamination as required by the Declaration of Covenants and Restrictions, which includes plans for: (1) Institutional Controls, (2) monitoring, (3) operation and maintenance and (4) reporting;

7. Periodic certification of the institutional controls listed above.

Table 2-1
Former Levco Metals Finishing Site
Astoria, New York
Soil Cleanup Objectives

	NYCRR 6 Part 375 Protection of Groundwater Soil Cleanup Objectives (SCO) ug/kg	NYCRR 6 Part 375 Commercial Use Soil Cleanup Objectives (SCOs) ug/kg
VOLATILE COMPOUNDS		
1,1,1-Trichloroethane	680	500,000
1,1,2,2-Tetrachloroethane	--	--
1,1,2-Trichloroethane	--	--
1,1,2-Trichlorotrifluoroethane	--	--
1,1-Dichloroethane	270	240,000
1,1-Dichloroethene	330	500,000
1,2,3-Trichlorobenzene	--	--
1,2,4-Trichlorobenzene	--	--
1,2-Dibromo-3-Chloropropane	--	--
1,2-Dibromoethane	--	--
1,2-Dichlorobenzene	--	500,000
1,2-Dichloroethane	--	30,000
1,2-Dichloropropane	--	--
1,3-Dichlorobenzene	--	280,000
1,4-Dichlorobenzene	--	130,000
2-Butanone	--	500,000
2-Hexanone	--	--
4-Methyl-2-Pentanone	--	--
Acetone	--	500,000
Benzene	--	44,000
Bromochloromethane	--	--
Bromodichloromethane	--	--
Bromoform	--	--
Bromomethane	--	--
Carbon Disulfide	--	--
Carbon Tetrachloride	--	22,000
Chlorobenzene	--	500,000
Chloroethane	--	--
Chloroform	--	350,000
Chloromethane	--	--
cis-1,2-Dichloroethene	250	500,000
cis-1,3-Dichloropropene	--	--
Cyclohexane	--	--
Dibromochloromethane	--	--
Dichlorodifluoromethane	--	--
Ethyl Benzene	--	390,000
Isopropylbenzene	--	--
m/p-Xylenes	--	500,000
Methyl Acetate	--	--
Methyl tert-butyl Ether	--	500,000
Methylcyclohexane	--	--
Methylene Chloride	--	500,000
o-Xylene	--	500,000
Styrene	--	--
Tetrachloroethene	1,300	150,000
Toluene	--	500,000
traNT-1,2-Dichloroethene	190	500,000
t-1,3-Dichloropropene	--	--
Trichloroethene	470	200,000
Trichlorofluoromethane	--	--
Vinyl Chloride	--	13,000

Notes:
--: Not analyzed or no standard
ug/kg: Micrograms per kilogram
mg/kg: Milligrams per kilogram

	NYCRR 6 Part 375 Commercial Use Soil Cleanup Objectives (SCO) ug/kg
SEMIVOLATILE COMPOUNDS	
1,1-Biphenyl	--
1,2,4,5-Tetrachlorobenzene	--
1,4-Dioxane	130,000
2,2'-Oxybis(1-chloropropane)	--
2,3,4,6-Tetrachlorophenol	--
2,4,5-Trichlorophenol	--
2,4,6-Trichlorophenol	--
2,4-Dichlorophenol	--
2,4-Dimethylphenol	--
2,4-Dinitrophenol	--
2,4-Dinitrotoluene	--
2,6-Dinitrotoluene	--
2-Chloronaphthalene	--
2-Chlorophenol	--
2-Methylnaphthalene	--
2-Methylphenol	500,000
2-Nitroaniline	--
2-Nitrophenol	--
3,3-Dichlorobenzidine	--
3+4-Methylphenols	500,000
3-Nitroaniline	--
4,6-Dinitro-2-methylphenol	--
4-Bromophenyl-phenylether	--
4-Chloro-3-methylphenol	--
4-Chloroaniline	--
4-Chlorophenyl-phenylether	--
4-Nitroaniline	--
4-Nitrophenol	--
Acenaphthene	500,000
Acenaphthylene	500,000
Acetophenone	--
Anthracene	500,000
Atrazine	--
Azobenzene	--
Benzaldehyde	--
Benzidine	--
Benzo(a)anthracene	5,600
Benzo(a)pyrene	1,000
Benzo(b)fluoranthene	5,600
Benzo(g,h,i)perylene	500,000
Benzo(k)fluoranthene	56,000
Benzyl alcohol	--
Bis(2-chloroethoxy)methane	--
Bis(2-chloroethyl)ether	--
Bis(2-Ethylhexyl)phthalate	--
Butylbenzylphthalate	--
Caprolactam	--
Carbazole	--
Chrysene	56,000
Dibenzo(a,h)anthracene	560
Dibenzofuran	350,000
Diethylphthalate	--
Dimethylphthalate	--
Di-n-butylphthalate	--
Di-n-octyl phthalate	--
Fluoranthene	500,000
Fluorene	500,000
Hexachlorobenzene	6,000
Hexachlorobutadiene	--
Hexachlorocyclopentadiene	--
Hexachloroethane	--
Indeno(1,2,3-cd)pyrene	5,600
Isophorone	--
Naphthalene	500,000
Nitrobenzene	69,000
N-Nitrosodimethylamine	--
n-Nitroso-di-n-propylamine	--
N-Nitrosodiphenylamine	--
Pentachlorophenol	6,700
Phenanthrene	500,000
Phenol	500,000
Pyrene	500,000

	NYCRR 6 Part 375 Commercial Use Soil Cleanup Objectives (SCOs) mg/kg
Metals	
Aluminum	--
Antimony	--
Arsenic	16
Barium	400
Beryllium	590
Cadmium	9.3
Calcium	--
Chromium	1,500
Cobalt	--
Copper	270
Iron	--
Lead	1,000
Magnesium	--
Manganese	10,000
Mercury	2.8
Nickel	310
Potassium	--
Selenium	1,500
Silver	1,500
Sodium	--
Thallium	--
Vanadium	--
Zinc	10,000

3.0 INTERIM REMEDIAL MEASURES AND REMEDIAL CONTRACTS

A brief summary of the investigation and remedial history of the Site beginning with the original site assessment completed in 1987 is included as Section 2.3 of the SMP. The following section is an excerpt of the previous remedial actions from that summary.

3.1 Interim Remedial Measures

Between September and November of 1993, an Interim Remedial Measure (IRM) was voluntarily implemented by the site owner to remove contaminated soil from the sump area (see ***Figure 1-2***). Material was removed from within the sump including the walls and bottom of the structure. Endpoint samples were collected following IRM activities which indicated that elevated Volatile Organic Compound (VOC) concentrations persisted in the soil. It was concluded that the clay layers in the vicinity of the sump were impeding vertical contaminant migration in the unsaturated zone. Following remediation efforts, the site was reclassified by the NYSDEC from a Class 2a to a Class 2 inactive hazardous waste site. The information and certifications made in the September 1993, Applied Environmental, Inc. Interim Remedial Measures Work Plan were relied upon to prepare this report and certify that the remediation requirements for the Site have been met.

A second IRM was initiated by the site owner in August 1994, and additional excavation activities began in October 1994. Approximately 14 cubic yards of VOC-contaminated soil was removed from the former sump. Post-excavation samples revealed that VOCs were sufficiently remediated but chromium and cadmium were present at concentrations above NYSDEC soil cleanup objectives. In November 1994, the sump was backfilled with clean fill and sump piping was sealed. The information and certifications made in the February 1995, Geraghty & Miller, Inc. Interim Remedial Measure and Supplemental Site Investigation Report were relied upon to prepare this report and certify that the remediation requirements for the Site have been met.

3.2 Remedial Contracts

In March and April of 1991, hazardous materials were removed from the former Levco facility and disposed of off-site and the facility was decontaminated. The hazardous material removal and decontamination activities consisted of:

- The removal and disposal of all interior equipment and machinery associated with the process operation.
- Power-washing of the building structure and installation of a new concrete slab floor in the former stripping and etching area.
- Hazardous and nonhazardous waste was transported for treatment and disposal to a permitted off-site facility.

Following the decommissioning of the Levco Site, the former Levco building was demolished in 2000. The Site was redeveloped as an asphalt employee parking lot for Kaufman Astoria Studios.

An air sparging/soil vapor extraction (AS/SVE) system was installed in March 2005 to actively remediate VOCs present in on-site groundwater and soil. The AS/SVE system operated until approximately August 2007. The AS/SVE system was successful in reducing VOC concentrations in groundwater at the Site, thus, preventing off-site migration of contaminated groundwater.

4.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED

Remedial activities completed at the Site were conducted in accordance with the NYSDEC-approved July 2010 RAWP for the former Levco Metals Finishing Property, and revised by the following NYSDEC-approved documents:

- "Pre-Construction Soil Characterization Report and Excavation Plan," dated March 2017 and revised September 2017.
- "Addendum to Excavation Plan for Drilling of Piles," letter dated August 14, 2017.
- "Notification of Modification to Remedial Action Work Plan," letter dated January 25, 2018.

All deviations from the RAWP are noted below.

4.1 Governing Documents

Remedial construction activities included pre-mobilization work such as soil characterization and submission of written plans, followed by mobilization to the site, site preparation, excavation, off-site transportation and disposal of soil to allow for planned construction, endpoint sample collection, backfilling with clean recycled concrete aggregate (RCA) where needed, vapor barrier installation below the foundation of the new building and remediation closeout activities. Plans prepared as part of the remedial construction were reviewed and approved by NYSDEC prior to implementation. A description of the remedial construction activities governing documents follows.

4.1.1 Construction Health & Safety Plan (CHASP)

The Construction Health and Safety Plan (CHASP) was prepared by the remedial contractor as part of the remedial construction. Site personnel performing remedial activities were required to read and comply with the requirements of the CHASP.

The CHASP addressed all appropriate federal, state and local regulatory requirements necessary to undertake and successfully complete the remedial construction. The CHASP was prepared in accordance with 29 Code of Federal Regulation (CFR) 1910.120 and included the following:

- Health and safety organization;
- Project hazard assessment;
- Training requirements;
- Medical surveillance requirements;
- Project site control procedures;
- Standard operating procedures;
- Personal protective equipment requirements;
- Personal hygiene and decontamination protocols;
- Equipment decontamination procedures;
- Air monitoring requirements;
- Emergency equipment/first aid requirements;
- Emergency responses/contingency procedures; and
- Record keeping requirements.

All remedial work performed under this Remedial Action was in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA.

The Construction Health and Safety Plan was complied with for all remedial and invasive work performed at the Site.

4.1.2 Quality Assurance/Quality Control (QA/QC) Project Plan

The QA/QC Project Plan was included as Appendix K of the March 2017, revised September 2017 Pre-Construction Soil Characterization Report and Excavation Plan approved by the NYSDEC. The QA/QC Project Plan describes the specific policies, methodologies and quality assurance/ quality control activities designed to achieve the project data quality objectives for endpoint sampling.

4.1.3 Soil/Materials Management Plan (S/MMP)

The average excavation depth for construction of the new Stage building was 15 feet below grade across the entirety of the Site. The overall quantity of soil/fill excavated was approximately 22,772 tons.

A track-mounted crawler excavator with a mechanically operated bucket was used to unearth the soil/fill. The Site was gridded into a total of 12 grid cells, each being 5 feet in thickness, in order to systematically classify soil for shipment and disposal based on disposal facility requirements. Excavated materials were primarily direct-loaded into dump trucks or trailers for off-site disposal at permitted facilities based on available waste characterization data. The tires of loaded trucks were washed prior to leaving the Site and the street was cleaned periodically to prevent the tracking of soil into the surrounding neighborhood.

Any stockpiles of excavated soil/fill were placed on and covered with plastic sheeting during non-working hours. Air monitoring, construction fencing and normal work hours were implemented in order to ensure nuisance free performance in compliance with all applicable Federal, State and local laws and regulations. Dust control, including application of water, was implemented if visible dust was observed or dust readings were elevated during air monitoring. All excavation activities were overseen and documented by a qualified environmental professional provided by D&B.

Additional information on soil management is provided in the March 2017, revised September 2017 Pre-Construction Soil Characterization Report and Excavation Plan approved by the NYSDEC.

4.1.4 Stormwater Management Plan

Storm water management, soil erosion and sediment control were performed in accordance with New York State (NYS) Guidelines for Urban Erosion and Sediment Control. The Contractor was responsible for collection and disposal of storm water on-site, preventing off-site migration of storm water and construction related water, maintaining separation of potentially contaminated storm water with uncontaminated storm water and soil, preventing off-site migration of sediment, protecting existing storm water collection structures and protecting soil stockpiles from erosion during implementation of the remedial construction.

Temporary stockpiles of contaminated materials were placed on bermed plastic liners and covered with plastic liners to prevent erosion. Liners were secured in place with concrete blocks.

Additional soil erosion and sediment controls (e.g., hay bales or silt fences) were installed as necessary around the perimeter of the site and around storm water drainage inlet structures to prevent potentially contaminated runoff from migrating off-site and into storm water collection systems. On-site storm water was directed towards the open excavation for collection by the dewatering system.

4.1.5 Community Air Monitoring Plan (CAMP)

A Community Air Monitoring Plan (CAMP), including concentration-based action levels, was implemented as part of remedial construction. D&B was responsible for implementing all air monitoring activities during ground intrusive activities. The plan

complied with the requirements of the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan.

The CAMP included monitoring for particulates (i.e., dust) and VOCs. Two (2) on-site monitoring stations (one upwind and one downwind) were utilized for the CAMP, each equipped with a TSI DustTrak-II particulate meter for dust, and a RAE Systems MiniRAE 3000 Photoionization Detector (PID) with a 10.6 eV lamp for VOCs. The data was transmitted wirelessly to an on-site computer and preset alarms alerted D&B if levels of particulates or VOCs exceeded action levels. Action levels comply with the requirements of the NYSDOH Generic Community Air Monitoring Plan. CAMP monitoring station locations are shown on ***Figure 4-1,*** introduced in Section 4.3.

Particulate and VOC concentrations were monitored in real-time and integrated over a period of 15 minutes (or less) for comparison to the action levels. Real-time monitoring was conducted under the following conditions:

- If the downwind real-time aerosol monitor (RTAM) particulate level exceeded the upwind (background) level by 100 ug/m3 for the 15-minute period, or if airborne dust was observed leaving the work area, then dust suppression techniques were employed;

- Work continued using dust suppression techniques as long as the downwind RTAM particulate level remained less than 150 mg/m3 greater than the background level. If the level exceeded this value, work was stopped, and site work was reevaluated;

- If total organic vapor levels exceeded 5 ppm above background for the 15-minute average at the downwind perimeter, work activities were temporarily halted and monitoring continued. If levels readily decreased (per instantaneous readings) below 5 ppm above background, work activities resumed with continued monitoring;

- If downwind total organic vapor levels persisted at levels in excess of 5 ppm above background but less than 25 ppm, work activities were halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities resumed provided that the total organic vapor level 200 feet downwind or half the distance to the nearest potential receptor or residential /commercial structure, whichever is less, but in no case less than 20 feet, is below 5 ppm above background for the 15-minute

average. If the downwind total organic vapor level was 25 ppm above the upwind concentration, activities were shut down; and

- All readings were recorded.

4.1.6 Contractors Site Operations Plans (SOPs)

The Remediation Engineer reviewed all plans and submittals for this remedial project (i.e. those listed above plus contractor and subcontractor submittals) and confirmed that they were in compliance with the RAWP. All remedial documents were submitted to NYSDEC and NYSDOH in a timely manner and prior to the start of work.

4.1.7 Community Participation Plan

KAS notified the local community board of the remedial actions and construction of the new building. NYSDEC also released a public fact sheet on the NYSDEC website on March 8, 2017 announcing the beginning of the cleanup of contamination at the Site. Signage about the project was also posted on construction fencing surrounding the Site throughout remedial activities.

4.2 **Remedial Program Elements**

4.2.1 Contractors and Consultants

D&B, the certifying Engineer of Record, was retained by KAS to perform remedial inspection activities during the mobilization, excavation and foundation activities associated with the construction of new stages for film and television production. In addition, D&B implemented the CAMP and performed all waste characterization and endpoint sampling. KAS retained Urban Atelier Group (UAG) to perform general contracting services associated with the construction of the new Site building. Excavation, pile driving, drilling and foundation work associated with the construction of the new Site

building was performed by ECD NY, UAG's subcontractor. Excavation work was also completed by Benchmark Contracting, as a subcontractor to ECD NY. The vapor barrier installation was completed by Budget Waterproofing.

4.2.2 Site Preparation

A pre-construction meeting was held with NYSDEC and all contractors on March 1, 2017.

Documentation of agency approvals required by the RAWP is included in ***Appendix E***. A New York City Department of Environmental Protection (NYCDEP) dewatering permit was obtained on April 26, 2017 for the Site and is provided in ***Appendix F.*** The contractor obtained all federal, state and city permits required for construction activities, including a New York City Department of Buildings (NYCDOB) work permit.

All SEQRA requirements and all substantive compliance requirements for attainment of applicable natural resource or other permits were achieved during this Remedial Action.

The contractor mobilized to the Site in March 2017. Following mobilization, clearing activities consisted of the removal of asphalt, concrete, fencing, accumulated snow and light poles and properly disposing of these materials off-site. In addition, temporary facilities and utilities including a construction fence with gates, office trailers, storage trailers, portable toilets, telephone service, electrical power and lighting, potable water, dewatering equipment (frac tanks, pumps and carbon filter), truck cleaning pad, CAMP equipment and staging areas were established for use.

Prior to initiation of excavation activities, the Contractor accessed the Site to mark-out all site utilities, excavation areas and grid locations. Any utilities within the planned excavation area were capped and/or de-energized before undertaking the excavation. In

addition, soil erosion and sediment controls (e.g., hay bales or silt fences) were installed around the perimeter of the site and around storm water drainage inlet structures to prevent potentially contaminated runoff from migrating off-site and into storm water collection systems.

A NYSDEC-approved project sign was erected at the project entrance and remained in place during all phases of the Remedial Action.

4.2.3 General Site Controls

The Site was surrounded by a fence in accordance with New York City construction and building code requirements. The fences and gates were closed and locked when no activities were occurring on Site. In addition, security for the work, equipment, materials, supplies, facilities, personnel and incidentals, including the office trailers, was provided throughout the performance of the work.

All personnel and visitors were required to sign in and sign out with the Contractor upon arrival and departure. A log of vehicles and equipment entering and leaving the site was maintained by the Contractor. Warning signs were placed approximately every 200 linear feet on the perimeter fence to alert passersby and discourage trespassing. At the site entrance and egress points, signs stating "Proper Personal Protective Equipment Must Be Worn," "No Eating, Drinking or Smoking," and "Restricted Area - No Unauthorized Access" were posted. Additionally, each access and egress point were indexed with a unique number.

As discussed in Section 4.3 of this FER, all excavated soil was fully characterized prior to any excavation activities. However, soil was inspected/screened by D&B to ensure that the soil was appropriate for the intended disposal facility before being shipped off-site by truck. D&B signed all soil disposal manifests on behalf of the owner, and a log of waste transportation including soil quantity, location of excavated soil, manifest number and truck license plates was maintained by D&B personnel. D&B was also responsible for

maintaining records of all particulate and VOC levels on-site throughout Site activities as part of the CAMP.

Decontamination of equipment and vehicle tires was performed on-site prior to any departure from the Site, as needed. Stabilized construction pads were installed at the exits of the site. Top dressing of the pad with additional stone, or replacement of the stone was performed on an as needed basis. The stabilized construction pad served as the decontamination pad for pressure washing of vehicle tires prior to leaving the Site.

Within the limits of the Site, work zones consisting of a Clean Zone, a Contaminant Reduction Zone, a Support Zone and an Exclusion Zone were established, as feasible for this relatively small site. The Clean Zone was a contaminant-free area designated for visitors and/or remedial staff. Decontamination of equipment and personnel was performed within the limits of the Contaminant Reduction Zone. The Support Zone was divided into two areas: the Material Processing Area (MPA) and the Materials Support Area (MSA). The MPA was the location where materials were loaded onto transport vehicles for off-site disposal. The MSA or lay down area was used to store equipment that was used in remedial operations. The Exclusion Zone was always located adjacent to the excavation front, as the excavation front moved around the Site.

Care was taken so that soils with different levels of contamination (i.e. between grids), were not mixed. For the one area of hazardous cadmium-impacted soil, excavation equipment and non-essential personnel were kept outside of the impacted area in order to limit the amount of contact with hazardous soil. In addition, soil was primarily directly loaded onto lined trucks for off-site disposal. Soil stockpiles were surrounded with suitable erosion controls and stockpiled on and covered by plastic sheeting to prevent windblown dust or erosion. Soil containers were lined and covered prior to transport.

NYCDOB issued a stop work order on April 3, 2017 due to vibration impacts on the adjacent building to the South (Stage K) suspected to be caused by pile driving work being completed on-site. As a result, the contractor demobilized from the Site for several

months in order to ensure building stability prior to continuing remedial excavation activities. The contractor remobilized to the Site after the stop work order was lifted in July 2017. To satisfy NYCDOB, pile driving was discontinued and drilling piles with water was utilized as an alternative. The procedures established to control drilling water and cuttings which resulted from the drilling of piles were detailed in the NYSDEC-approved August 14, 2017 letter entitled, "Addendum to Excavation Plan for Drilling of Piles," included in ***Appendix G***. The handling of drilling water and cuttings are discussed as deviations from the RAWP in Section 4.10.

As indicated in a letter to NYSDEC dated July 13, 2017, a one-time discharge of water to an on-site storm sewer occurred during remedial activities on April 13, 2017. During excavation of soil in the shallow excavation zone in Grid S2, a storm water dry well was discovered by the on-site excavation contractor. The dry well was observed to contain accumulated storm water and the excavation contractor began to pump the accumulated storm water into an adjacent on-site storm water sewer on 36th Street. The dry well was encountered approximately 2 feet below grade and was approximately 10 feet in depth. It is estimated that a total of 1,500 gallons of storm water were removed and discharged to the sewer. It should be noted that the dry well did not contain any groundwater and the accumulated storm water did not appear to be contaminated, as D&B did not observe any sheens or odors. Furthermore, the dry well is not located in the vicinity of known Site contamination, including the cadmium and TCE hot-spots in the eastern portion of the Site. As the Contractor did not have a NYCDEP discharge permit, discharge to the on-site sewer was stopped until a NYCDEP discharge permit could be obtained. The Contractor obtained a NYCDEP discharge permit on April 26, 2017 and this permit is included in ***Appendix F***.

4.2.4 Nuisance Controls

As stated above, a CAMP was performed throughout the duration of the work and dictated actions required to control emissions. Standard dust suppression techniques that were employed during excavation activities as well as any other material handling activities at the Site included:

- Installing gravel pads at vehicle egress points;
- Application of wetting agents to soil, stockpiles, excavation faces, buckets and equipment during excavation;
- Tarping/covering containers;
- Restricting vehicle speeds to 10 miles per hour;
- Covering of excavations after completion of excavation activities;
- Covering of stockpiles; and
- Minimization of material stockpiling on-site and direct loading excavated material to hauling vehicles.

In the event that dust and vapor suppression techniques did not lower the particulate and/or organic compound concentrations to an acceptable level, work was suspended until appropriate corrective action was implemented.

In order to minimize the potential for dust traveling off-site, a decontamination pad/stabilized construction entrance for the decontamination of equipment and vehicles during performance of the remedial construction was installed in the northeast corner of the Site. The decontamination pad was equipped with a curbed perimeter and was underlain by an impervious liner. The Contractor was required to ensure that all heavy equipment was clean prior to crossing areas of the Site which do not require remediation or had already been remediated, handling clean fill materials and leaving the Site. In addition, soil stockpiles were surrounded with suitable erosion controls and stockpiled on and covered by plastic sheeting to prevent windblown dust or erosion.

Trucks transporting hazardous waste were lined. All soil containers were covered prior to transport. Furthermore, truck egress was also limited to one entrance/exit along 34th Avenue. The tires of loaded trucks were washed prior to leaving the Site and the street was cleaned periodically to prevent the tracking of soil into the surrounding neighborhood.

Drivers of trucks leaving the Site with soil were instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. The Contractor prepared a traffic control plan, which detailed the routing of on-site truck traffic during the course of the work, off-site truck routes to and from the Site, as well as perimeter gate locations for ingress and egress from the Site. Generally, trucks were routed via 34th Avenue and Steinway Street to Northern Boulevard, limiting the driving of trucks through residential neighborhoods. The truck route was provided to NYSDEC via e-mail on March 10, 2017. The Contractor was responsible for coordinating with the off-site transportation and disposal company to ensure that transport times were coordinated in the most efficient way and off-site queuing was limited.

NYSDEC was notified of any complaints made by the public. In addition, KAS kept the local community board informed of the ongoing work.

4.2.5 CAMP Results

As discussed in Section 4.1.5, D&B maintained a Community Air Monitoring Program (CAMP) during all ground intrusive work, including one upwind and one downwind station each equipped with a RAE Systems MiniRAE 3000 PID for volatile compounds, and a TSI DustTrak-II particulate meter for dust. Action levels were provided in Section 4.1.5. Copies of all field data sheets relating to the CAMP are provided in electronic format in ***Appendix H.***

During periods of high humidity and precipitation, dust/VOC emissions were suppressed, and air monitoring was suspended to avoid damage to the instruments, as well as erroneous readings. Action levels were met or exceeded on the dates provided below in ***Table 4-1***.

Table 4-1

Exceedances of Action Levels During CAMP

Date of Action Level Exceedance	Meter
8/1/2017	Downwind Dust
9/25/2017	Upwind Dust
9/26/2017	Upwind Dust
10/5/2017	Downwind Dust
10/6/2017	Downwind Dust
10/7/2017	Downwind Dust
10/11/2017	Upwind Dust
10/12/2017	Upwind Dust
	Downwind Dust
10/13/2017	Upwind Dust
10/14/2017	Upwind Dust
10/18/2017	Upwind Dust
10/21/2017	Upwind Dust
10/30/2017	Upwind Dust
11/3/2017	Downwind Dust
11/6/2017	Downwind Dust
11/13/2017	Upwind Dust
11/14/2017	Upwind Dust
11/15/2017	Upwind Dust
11/17/2017	Upwind Dust
11/20/2017	Upwind Dust
11/24/2017	Downwind Dust
12/1/2017	Upwind Dust
12/4/2017	Upwind Dust
12/27/2017	Upwind VOC
1/8/2018	Downwind Dust
1/9/2018	Downwind Dust
1/10/2018	Downwind Dust
1/11/2018	Upwind Dust
	Downwind Dust
1/16/2018	Upwind Dust
1/19/2018	Upwind Dust
2/10/2018	Upwind Dust
2/15/2018	Upwind Dust
	Downwind Dust
	Upwind VOC
2/19/2018	Upwind VOC
2/20/2018	Downwind Dust
	Upwind VOC
2/23/2018	Upwind Dust
2/26/2018	Upwind Dust
3/15/2018	Upwind Dust
3/29/2018	Upwind Dust
4/4/2018	Upwind Dust
4/11/2018	Downwind Dust

The action level exceedances were mainly attributed to on-site activities, including nearby welding activities, housekeeping activities, equipment exhaust, tree removal or meter malfunction. On a few occasions, upwind dust exceedances were caused by off-site activities such as sidewalk removal and filming activities. In all instances of exceedances, the high readings were temporary, and no dust was observed to be traveling off-site. Responses to the exceedances included wetting the area in order to suppress dust, suspending or moving wielding activities, moving equipment farther from the meters and re-calibration of the meters. Detailed descriptions of all exceedances and responses are included in the Monthly reports, which are provided in ***Appendix I***.

4.2.6 Reporting

Daily reports were prepared by D&B and provided electronically by e-mail to NYSDEC by noon of the following day. Daily reports included daily weather conditions; remedial construction activities performed; samples collected and results; air monitoring (CAMP) results; problems encountered; planned activities for the next day/week; a trucking summary; and photographs.

Monthly reports were prepared by D&B and provided electronically to NYSDEC and NYSDOH via e-mail by the 10th day of the following month. Such reports included all actions relative to the Site during the previous reporting period and those anticipated for the next reporting period; all approved activity modifications (changes of work scope and/or schedule); all results of sampling and tests and all other data received or generated in connection with the Site in the previous reporting period, including all CAMP data; information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule and efforts made to mitigate such delays.

All daily and monthly reports, which include project photos, are included in electronic format in ***Appendix I.***

4.3 Contaminated Materials Removal

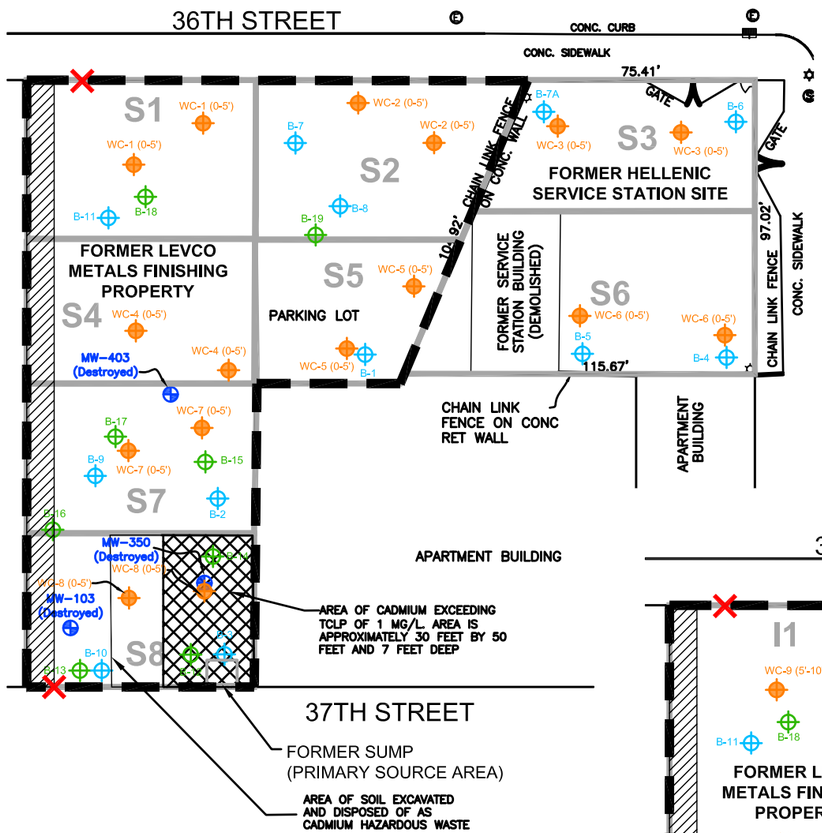
The excavation depth for construction of the on-site new Stage building is approximately 15 feet below grade across the entirety of the Site. The overall quantity of soil/fill excavated was approximately 22,772 tons. Based on pre-characterization results, the Site was gridded into a total of 12 grid cells, each being 5 feet in thickness, in order to systematically classify soil for shipment and disposal based on disposal facility requirements. The 12 grid cells included 6 shallow grid cells, 3 intermediate grid cells and 3 deep grid cells. In addition, one 10 foot by 10 foot area centered on soil boring B-3 was excavated an additional 2 feet, from 15 to 17 feet, at the request of NYSDEC. A number of areas also were excavated and disposed separate from the majority of Site soil given the presence of contaminants above regulatory levels, including hazardous cadmium soil in shallow grid S8 and various "hot-spots" where TCE was found to exceed the NYSDEC SCO for the protection of groundwater.

Two deviations from the RAWP were also encountered that effected the removal of soil:

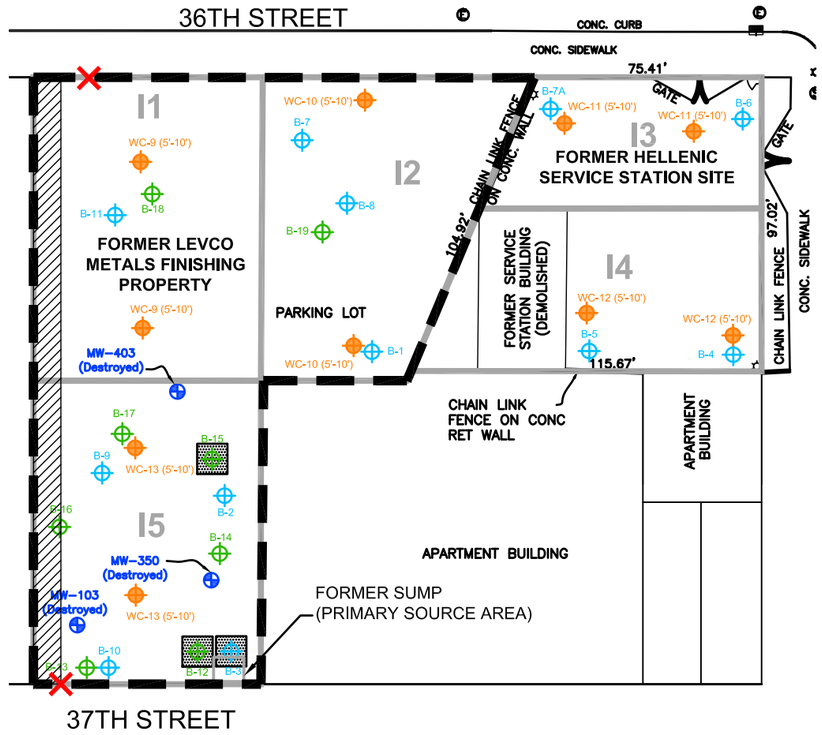
- A 9-foot wide zone on the southern boundary of the Site adjacent to an off-site building remains in place for structural reasons. This area was only excavated to 2 feet below grade.
- A concentration of TCE above the Protection of Groundwater SCO in endpoint sample EP-32 resulted in additional excavation. A 10 foot by 10 foot area centered on endpoint soil sample EP-32 was excavated an additional 2 feet, from 15 to 17 feet.

These deviations are further discussed in Section 4.10. A figure of areas where excavations were performed is shown in ***Figure 4-1***. A list of the soil cleanup objectives (SCOs) for the contaminants of concern for this project was provided in ***Table 2-1***. Note that remediation of the adjacent Hellenic Site was completed concurrently with the Levco Site as part of the development. A summary of the soil excavation and disposal details for the Hellenic Site are included in ***Appendix B***.

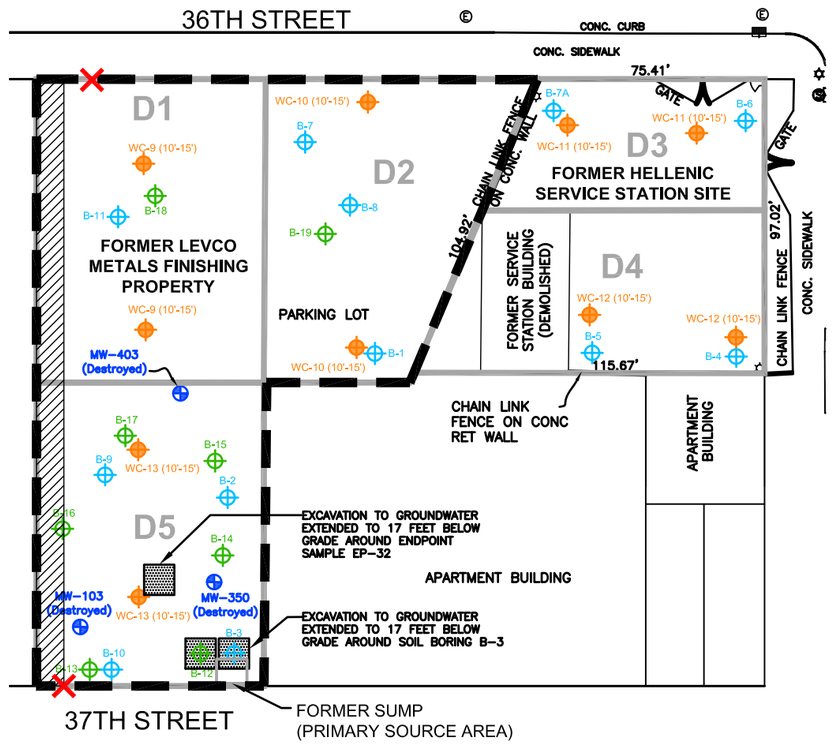
SHALLOW ZONE



INTERMEDIATE ZONE



DEEP ZONE



LEGEND

- BOUNDARY OF SITE
- WC-1 (0-5') — WASTE CHARACTERIZATION SOIL SAMPLE LOCATION (COMPOSITE)
- MW-205 — GROUNDWATER MONITORING WELL
- B-17 — COMPLETED GEOTECHNICAL SOIL BORING
- B-9 — COMPLETED GEOPROBE SOIL BORING
- S1 — SOIL MANAGEMENT UNIT
- 10' BY 10' AREAS AROUND SELECT BORING/SAMPLE LOCATIONS DISPOSED IN ACCORDANCE WITH NOVEMBER 3, 2016 AND FEBRUARY 23, 2018 CONTAINED IN LETTERS DUE TO TCE CONCENTRATIONS
- APPROXIMATE 9-FOOT WIDTH OF SOIL REMAINING IN PLACE EXCEPT FOR APPROXIMATE 2-FEET OF SOIL REMOVED FROM SHALLOW GRIDS.
- CAMP STATION LOCATIONS

0 50'
SCALE IN INCHES

D&B ENGINEERS AND ARCHITECTS, P.C.

FORMER LEVCO METALS FINISHING PROPERTY

SCALE:1"=50'-0"

EXCAVATION PLAN SHOWING GRID CELLS

FIGURE 4-1

F:\3908\dwg\3908 - FER Fig 4-1.dwg, 6/18/2018 8:32:22 AM, Adobe PDF.pc3

Given the soil was previously fully characterized for off-site disposal, soil was loaded directly into dump trucks and transported off-site and on-site soil stock piling was minimized.

The following subsections describe each medium or waste stream removed, including underground storage tanks (USTs), soil and groundwater. This section describes any activities which were slightly modified from the original scope of work presented in the RAWP due to field conditions. Such deviations are also described in Section 4.10.

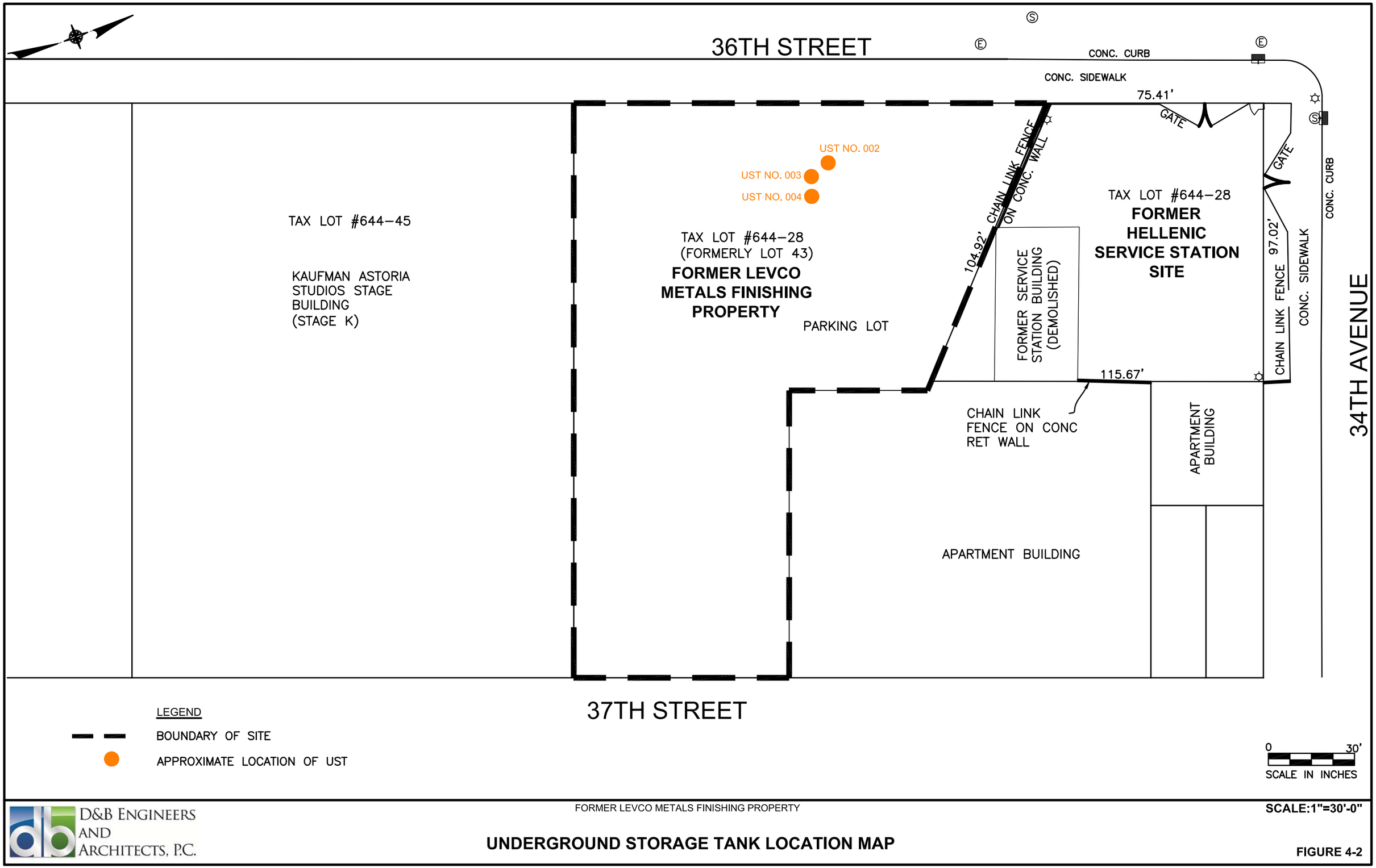
4.3.1 Underground Storage Tanks

During the completion of remedial excavation activities, a total of three abandoned USTs (Tank Nos. 2 through 4) were encountered at an approximate depth of 3 feet below grade, as documented in the daily and monthly reports provided to the NYSDEC and attached to this report as ***Appendix I***. The discovery and closure of the USTs was also documented in a November 27, 2017 letter to NYSDEC, provided in ***Appendix J***. A site plan depicting the approximate location of the identified USTs is provided as ***Figure 4-2***. The tanks were left in place until a New York City Fire Department (FDNY) Licensed Tank Installer/Remover could pump out, cut and clean the tanks. Details concerning the USTs and the associated closures are provided in the ***Table 4-2*** below.

Table 4-2

UST Summary Table

Tank ID	Capacity (gallons)	Former Contents	Closure Contractor	Closure Date	Materials Removed from UST During Cleaning
Tank No. 002	550	No. 2 fuel oil	AARCO Environmental Services, Corp.	March 22, 2017	30 gallons of petroleum, 2 drums of oily debris
Tank No. 003	550	No. 2 fuel oil	Action Environmental Inc.	March 24, 2017	1,100 gallons of oily water, one drum of oily debris
Tank No. 004	550	No. 2 fuel oil	Action Environmental Inc.	March 24, 2017	



D&B ENGINEERS AND ARCHITECTS, P.C.

FORMER LEVCO METALS FINISHING PROPERTY

UNDERGROUND STORAGE TANK LOCATION MAP

SCALE:1"=30'-0"

FIGURE 4-2

F:\3908\dwg\3908 - UST Location Map_rev11-17 FER.dwg, 6/18/2018 8:33:28 AM, Adobe PDF.pc3

Following the UST cleaning activities, the UST interiors were inspected and observed to be free of sludge/residual oil. Upon the removal of all USTs, the surrounding soil was inspected for evidence of contamination, such as staining or odors and soil was screened with a photoionization detector (PID) for the presence of VOCs. Elevated PID readings were observed around all three UST; however, no staining was observed in the soil and only minor odors were detected. As a precaution, the soil immediately around the USTs was disposed as petroleum contaminated soil, although there was no evidence of a significant spill.

It should be noted that the three identified USTs did not appear to be registered with the NYSDEC. A NYSDEC Petroleum Bulk Storage (PBS) registration application form was completed by D&B and submitted to NYSDEC in a letter dated January 17, 2018. The PBS facility was subsequently closed by NYSDEC. UST closure documentation is provided in ***Appendix J***.

4.3.1.1 UST Disposal Details

One UST was cleaned on March 22, 2017 by AARCO Environmental Services Corp (EPA ID No. NYR000107326). Two drums of oily debris cleaned from the tank were taken to Dale Transfer Station in West Babylon, New York and 30-gallons of non-hazardous petroleum product was taken to Advanced Waste Water Treatment Corp. of Farmingdale, New York. Two USTs were cleaned on March 24, 2017 by Action Remediation, Inc (Action). One drum of debris cleaned from the USTs was taken by Action (EPA ID No. NYD064748304) to Veolia Environmental Services Technical Solutions, Inc. (NYD080631369) to their facility in Flanders, New Jersey and 1,100-gallons of oily water from the tanks was taken to Action Trucking Co., Inc. in Wantagh, New York. All tanks were disposed of as scrap metal by the Contractor. Although elevated PID readings were observed around all three USTs, no staining was observed in any soil surrounding the USTs; however, as a precaution, soil immediately surrounding the USTs was disposed of as petroleum contaminated soil. Waste disposal documentation and UST removal affidavits associated with the UST closures is provided in ***Appendix J.***

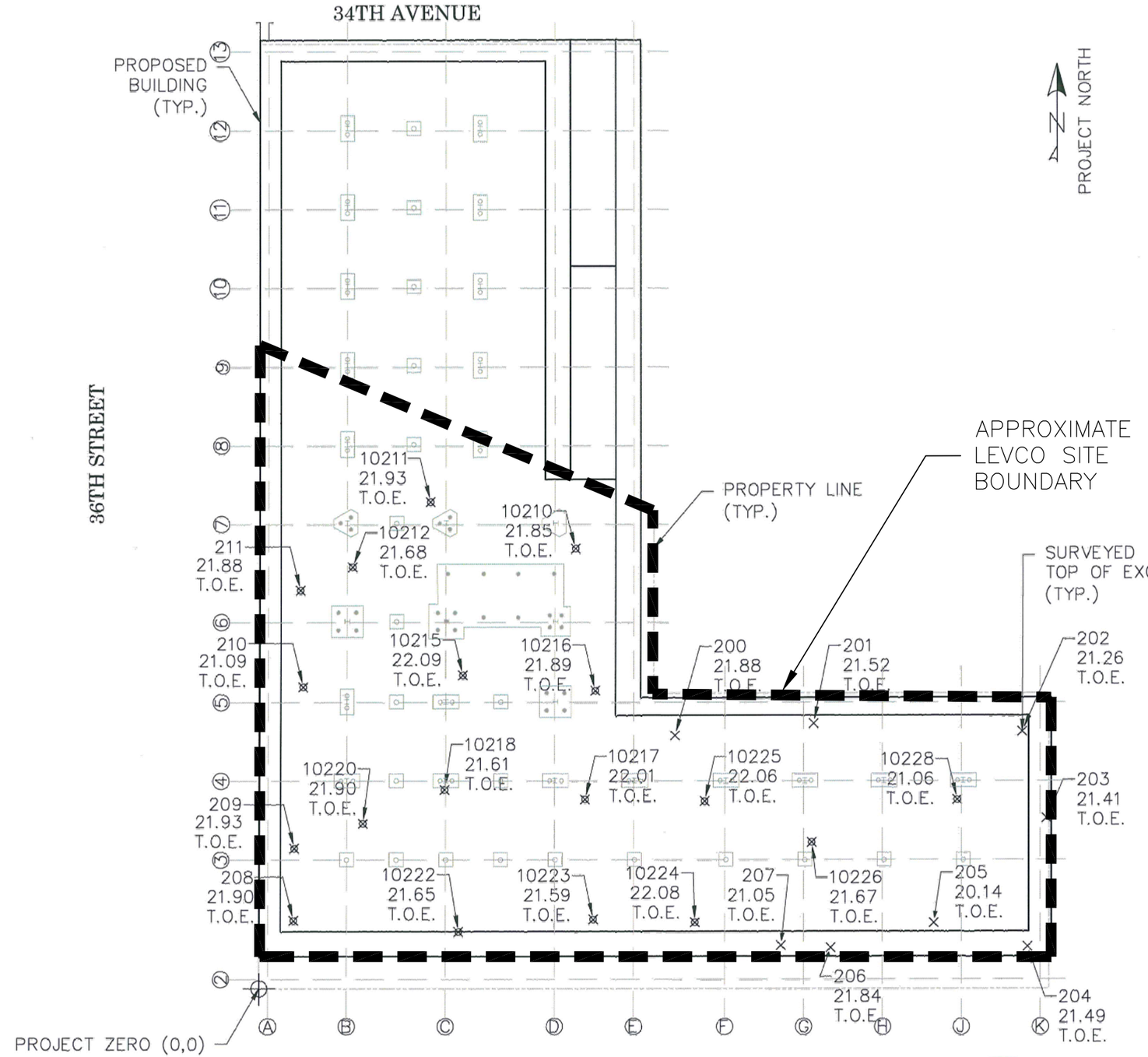
4.3.2 Soil

As shown on ***Figure 4-1***, the Site was gridded into a total of 12 grid cells, each being 5 feet in thickness, in order to systematically classify soil for shipment and disposal based on disposal facility requirements. The 12 grid cells include 6 shallow grid cells (0-5 feet below grade), 3 intermediate grid cells (5-10 feet below grade) and 3 deep grid cells (10-15 feet below grade). In addition, one 10 foot by 10 foot area centered on soil boring B-3 was excavated an additional 2 feet, from 15 to 17 feet. Based on endpoint sample results, NYSDEC requested 2 additional feet also be excavated around endpoint sample EP-32 (see Section 4.10). Finally, based on a field deviation, drill cuttings from pile installation were generated, characterized and disposed of off-site (see Section 4.10). An as-built drawing of the final elevations following excavation, stamped by a licensed land surveyor, for remedial activities at the Site is included in ***Figure 4-3***.

Grid boundaries and surface elevations were periodically surveyed and staked by the excavation contractor's surveyor to maintain the soil grid cell system throughout the excavation phase of work. This ensured that soil from each grid cell was placed in the proper truck for off-site disposal at the designated facility based on how each grid cell has been characterized. The following are brief descriptions of the types of soil which were removed:

Cadmium Hazardous Soil

During waste characterization as detailed in the Pre-Construction Soil Characterization Report and Excavation Plan, dated March 2017 revised September 2017, TCLP cadmium was detected at a concentration of 2.93 mg/l in soil sample WC-8 (0 to 5 feet) in Grid S8, from the eastern portion of the Site, exceeding the Resource Conservation and Recovery Act (RCRA) Maximum Concentration of Contaminants for Toxicity Characteristic level of 1.0 mg/l. Eleven additional soil borings were completed in the



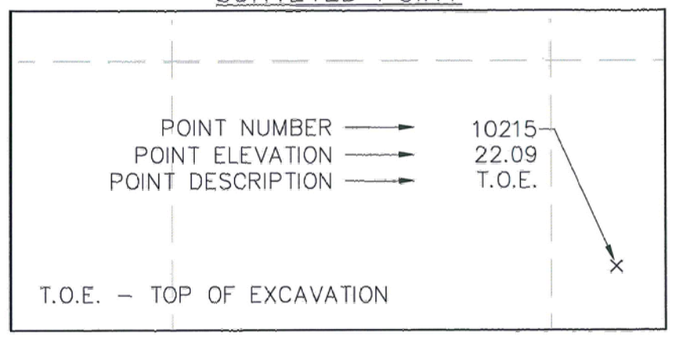
NOTE:

1. FIELD SURVEY PERFORMED BY GSESP INC ON 02-13-2018 AND 02-27-2018.
2. PROPOSED FEATURES SHOWN HEREIN BASED ON DRAWING 'SOE AS-BUILT COORDINATE PLAN', FEBRUARY 09,2018 BY ECD NY INC.
3. HORIZONTAL DATUM REFERENCED TO PROJECT SYSTEM WITH ZERO SET IN SW PROPERTY CORNER.
4. VERTICAL DATUM REFERENCED TO NAVD88.

D&B NOTES:

1. LEVCO SITE BOUNDARY ADDED TO EXISTING SURVEY BY D&B.

TYPICAL DETAIL OF SURVEYED POINT



REV.	DATE	BY	CHKD	DESCRIPTION
0	03/01/18	IM	SD	ISSUED

SCALE: 1"=30'
30 0 30 60
ORIGINAL DRAWING PRINT SIZE IS 11"x17"

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LICENSED LAND SURVEYOR
NY LICENSE NO. 050689-1
CERTIFICATE OF AUTHORIZATION NUMBER 0005688

DRN:	IM
DES:	–
CHK:	SD
APP:	–

ECD NEW YORK
KAUFMAN STUDIOS ASTORIA
34-12 36TH STREET, QUEENS, NEW YORK

PROJECT NO.: NY17-057
CLASSIFICATION: SURVEY

TOP OF EXCAVATION AS-BUILT SURVEY

DRAWING No.: NY17-057-100

REV. 0 03/01/18

X:\PROJECT\2017\NYC17-057 - ECD NY -Kaufman Studios Astoria\SURVEY\008 - Final Drawings\NY17-057-100.dwg Mar 01, 2018-11:58AM
F:\3908\dwg\3908 - FER Fig 4-3.dwg, 5/17/2018 11:39:26 AM, Adobe PDF

FIGURE 4-3

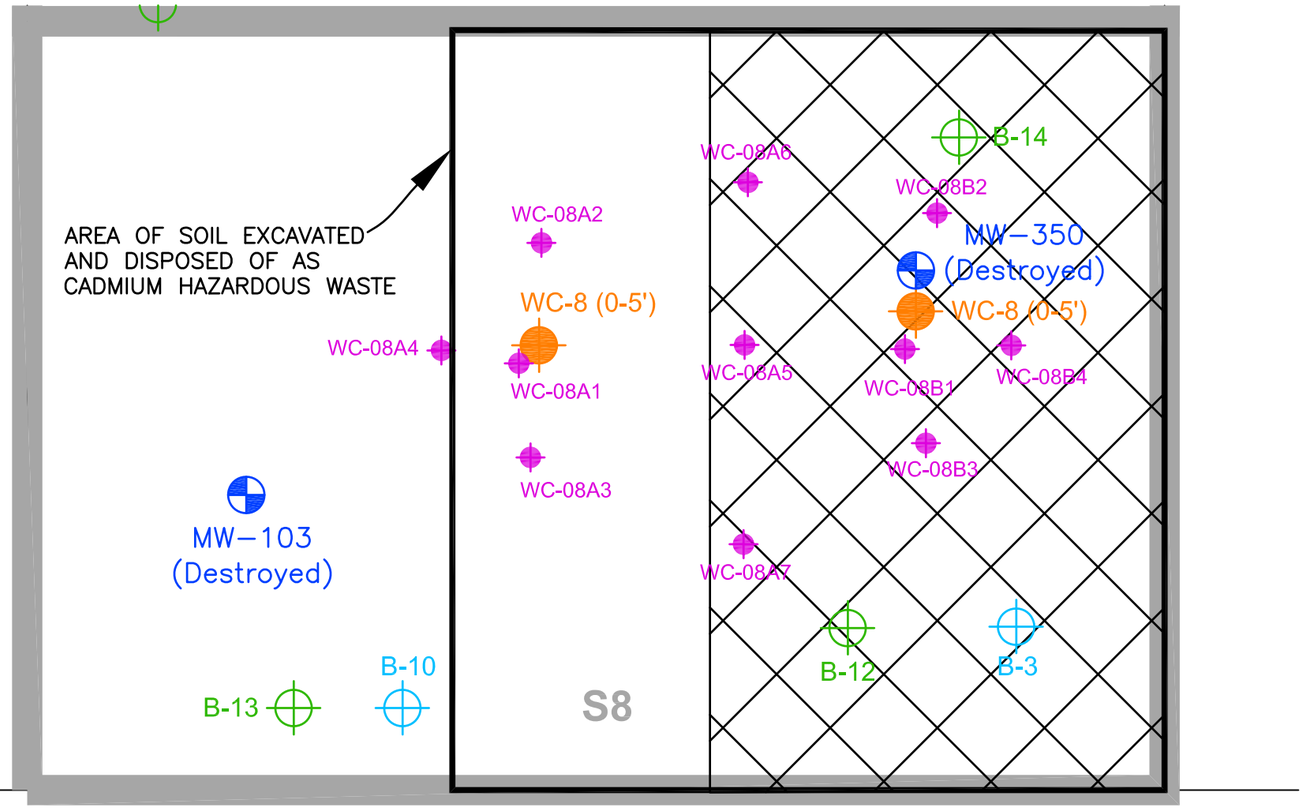
vicinity of waste characterization soil sample WC-8 and a total of 25 soil samples were collected for total and TCLP cadmium analysis in order to delineate the area of hazardous cadmium contamination. The defined area of hazardous cadmium soil is depicted on ***Figure 4-1*** and was properly disposed during remedial excavation activities. The completed additional delineation soil boring locations are depicted on ***Figure 4-4***, and documented in the March 1, 2017 Cadmium Investigation Letter Report provided in the Excavation Plan. Note that all soil in Grid S8 from the northern end to the southernmost delineation sample point was disposed of as hazardous.

TCE Impacted Soil

One 10-foot by 10-foot area centered on soil boring B-3 and one centered on endpoint sample EP-32 were excavated an additional 2 feet, from 15 to 17 feet below ground surface, at the request of NYSDEC due to a detection of TCE above the Protection of Groundwater SCO in soil sample B-3 (15 to 17 feet) and endpoint sample EP-32. In addition, there were several identified TCE "hot-spots" within the excavation area in the southeastern corner of the Site, and the location of the assumed source area (the former sump), as depicted on ***Figure 4-1***. The TCE "hot-spots" were disposed to a lined landfill in accordance with the NYSDEC's Contained-In Policy as described in the November 3, 2016 and February 23, 2018, Contained-In Letters, included in ***Appendix K***.

Non-Hazardous Soil

All other soil excavated throughout the Site to approximately 15 feet below grade was disposed of as non-hazardous soil, including all drill cuttings during drilling of structural piles.



37TH STREET

LEGEND

WC-08A1	ADDITIONAL WASTE CHARACTERIZATION SOIL SAMPLE LOCATION (COMPOSITE)
WC-8 (0-5')	WASTE CHARACTERIZATION SOIL SAMPLE LOCATION (COMPOSITE)
MW-103	GROUNDWATER MONITORING WELL
B-12	COMPLETED GEOTECHNICAL SOIL BORING
B-3	COMPLETED GEOPROBE SOIL BORING
S8	SOIL MANAGEMENT UNIT
	APPROXIMATE AREA OF CADMIUM EXCEEDING TCLP OF 1 MG/L

NOTE

MAP DEPICTS SOIL MANAGEMENT UNIT S8, AS SHOWN ON FIGURE 4-1, EXCAVATION PLAN SHOWING GRID CELLS.

0 10'
SCALE IN INCHES

D&B ENGINEERS AND ARCHITECTS, P.C.

FORMER LEVCO METALS FINISHING

ADDITIONAL DELINEATION SOIL BORING LOCATION MAP

SCALE:1"=10'

FIGURE 4-4

F:\3908\dwg\3908 - FER Fig 4-4.dwg, 5/17/2018 11:29:19 AM, Adobe PDF.pc3

4.3.2.1 Soil Disposal Details

The majority of the soil removed during the remedial activities was pre-characterized as part of the Pre-Construction Soil Characterization Investigation conducted in November 2015 and in a follow-up pre-characterization on behalf of selected disposal facilities in December 2016. In total, 35 soil borings and 75 soil samples were collected, and the samples were analyzed for one of more of the following:

- VOCs;
- Semivolatile organic compounds (SVOCs);
- TAL and/or RCRA metals and cyanide;
- Pesticides;
- Full TCLP parameters (VOCs, SVOCs, pesticides and herbicides, metals);
- Hexavalent chromium;
- Polychlorinated biphenyls (PCBs);
- Total sulfur;
- pH;
- Total organic halides;
- TPH/EPH; and
- RCRA characteristics.

The December 2016 investigation included soil borings completed in each soil classification grid to depths ranging from 5 to 15 feet below grade with composite soil samples collected for analysis. Additional characterization sampling to define the hazardous cadmium soil was also completed as described in Section 4.3.2. Soil cuttings that were in contact with the drill water from grids in the southern portion of the Site prior to the utilization of lined trenches were segregated, tested and disposed separately from other on-site soil. Some of the soil cuttings and other trench soil was stockpiled on plastic

liners for testing and disposal. Approval for disposal of the drill cuttings was obtained based on the waste characterization results.

A description of the completed sampling and a presentation of the data was detailed in the Pre-Construction Soil Characterization Report and Excavation Plan, dated March 2017, revised September 2017. A summary of the samples collected to characterize the waste, and associated analytical results are summarized in ***Appendix K.***

Soil was removed from the Site between March 2017 and May 2018. ***Table 4-3*** shows the total quantities of each category of material removed from the Site and the disposal locations. Note that Table 4-3 also includes soil excavated as part of deviations to the RAWP as described in Section 4.10 (i.e. drill cuttings, additional excavation at endpoint EP-32). Thirty-one transporter companies were responsible for the trucking of all soil. These companies and their Part 364 Permit numbers are listed in ***Table L-1*** located in ***Appendix L***.

Letters from Applicants to disposal facility owners and acceptance letters from disposal facility owners are also attached in ***Appendix L.*** Manifests and bills of lading are included in electronic format in ***Appendix M.***

4.3.3 Water

Large scale dewatering of the Site was not required to complete the excavation to 15 feet below grade. However, localized dewatering with a groundwater treatment system was completed in the central portion of the Site in order to install an elevator pit and sewer ejector pit foundation located in Grid D2.

Given the presence of VOCs in groundwater at the Site, groundwater extracted by the dewatering system was treated using a combination of pre-treatment filtration and activated carbon. After treatment, groundwater was discharged under permit to the

Table 4-3
Former Levco Metals Finishing Site
Astoria, New York
Soil Disposal Summary

Disposal Facility	Soil Category	Soil Areas/Grids Sent to Facility	Weight of Soil Removed (Tons)
Capital Development Valley Industrial Properties LLC	Category B - PA Clean	S2, S4, S5, S7, I1, I2, D1	**11,623.16**
Hazleton Creek Properties, LLC	Category C - PA Regulated	S1, I5, D2	**5,708.01**
Bayshore Soil Management	Category D - Non-Hazardous Petroleum Impacted Soil	S2[1], D5, Drill Cuttings and Trench Soil[2]	**2,778.38**
Waste Management of NY at High Acres Landfill	Category E - Non-Hazardous Landfill	S8-S, TCE "Hotspots"[3]	**1,130.94**
Stericycle – Republic Env Sys LLC	Category F - Hazardous Cadmium Impacted Soil	S8-N[4]	**1,531.24**
Totals	--	--	**22,771.73**

Footnotes:

Total weight of soil for each facilitydetermined from manifests and weigh tickets.

[1]: Soil surrounding USTs only

[2]: Drill cuttings generated from drilling piles

[3]: TCE "Hotspots" were located at B-3 (5'-17'), B-12 (5'-15'), B-15 (5'-10') and EP-32 (15'-17')

[4]: Hazardous soil (exceeds TCLP cadmium)

Facility Addresses:

Capital Development Valley Industrial Properties LLC, 1 Capital Blvd East, Bangor, PA 18013

Hazleton Creek Properties, LLC, 282 South Church Street, Hazleton, PA 18201

Bayshore Soil Management, 75 Crow Mill Road, Keasbey, NJ 08832

WM of NY at High Acres Landfill, 425 Perinton Parkway, Fairport, NY 14450

Stericycle – Republic Env Sys LLC, 2869 Sandstone Drive, Hatfield, PA 19440

NYCDEP sewer on 36th Street and 34th Avenue. The NYCDEP permit is provided in ***Appendix F***.

In addition to dewatering, water was generated during the completion of borings for the placement of building piles, as detailed in the August 14, 2017 letter to NYSDEC entitled, "Addendum to Excavation Plan for Drilling of Piles," included in ***Appendix G***. As the original plan to drive the pilings was discontinued after due to the resulting vibration impacting the adjoining building, drilling with water was necessary. In addition, groundwater was also generated as part of the process. The handling of drilling water as outlined in the addendum included conveying the water along the ground through temporary trenches to an on-site collection basin and pumped into a settlement (or frac) tanks before being recycled for continued drilling use. For areas of the Site that have historically exhibited chlorinated VOCs (the southern Grids I1 and I5), the trenches and collection basins were lined in accordance with the addendum to prevent direct contact between the drilling water and the underlying soil.

In accordance with the addendum, three samples of the drilling water and two samples of the water from the tanks were collected for analysis. The results were provided to NYSDEC in the daily and monthly reports (***Appendix I)*** and are also provided in ***Appendix K*** and showed that chlorinated VOCs were not detected in any of the samples. In addition, RCRA metals results from the tank samples showed metal concentrations were below groundwater standards. Therefore, the drill water was not required to be disposed as a hazardous waste and could continue to be utilized for drilling activities on-site in accordance with the addendum. Although most drill water was re-used, less than 1,000 gallons of excess drill water was treated and discharged into the sewer system on-site in accordance with the NYCDEP permit. The NYCDEP permit is provided as ***Appendix F***.

4.4 Remedial Performance/Documentation Sampling

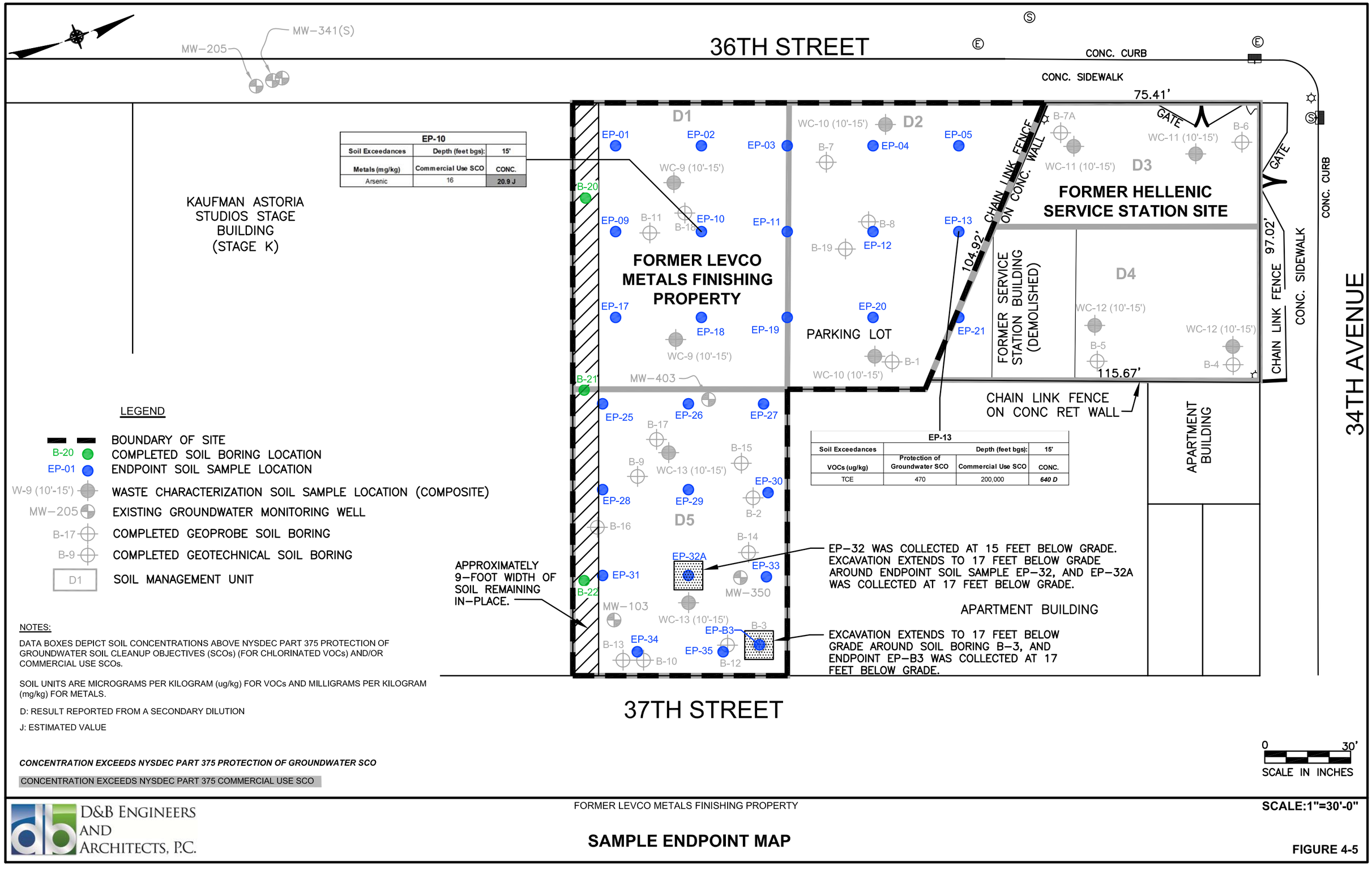
Upon reaching the final excavation depth, endpoint samples were collected in accordance with the July 2010 RAWP and the March 2017, revised September 2017 Pre-

Construction Soil Characterization Report and Excavation Plan. Endpoint samples were collected by D&B from the base of the excavation to determine the characteristics of the remaining soil. Note that support of excavation and foundation walls encompassed the entire property boundary and therefore no side wall samples were collected.

Samples were collected in accordance with the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation at a density of approximately one for every 900 square feet of area. A total of 28 endpoint samples were collected. Endpoint samples were collected for laboratory analysis of Target Compound List (TCL) VOCs by United States Environmental Protection Agency (USEPA) Method 8260 and 5035 and Target Analyte List (TAL) metals by USEPA Method 6010. TCL VOCs were compared to the Protection of Groundwater SCOs for chlorinated VOCs and the Part 375 Commercial Use SCOs, and TAL metals were compared to the Commercial Use SCOs. Tables and a figure summarizing all endpoint sampling is included in ***Appendix N*** and ***Figure 4-5***, respectively, and all exceedances of SCOs are highlighted. Although not a cleanup objective for this Site, Unrestricted Use SCO exceedances are provided on the data summary tables in ***Appendix N*** and in ***Section 4.6*** for documentation purposes.

A QA/QC plan describing sampling procedures and field documentation was provided in the March 2017, revised September 2017 Pre-Construction Soil Characterization Report and Excavation Plan. One blind duplicate and one matrix spike/matrix spike duplicate (MS/MSD) sample was submitted for every 20 endpoint samples collected. All endpoint samples were submitted to Chemtech of Mountainside, New Jersey, a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory. Data Usability Summary Reports (DUSRs) were prepared for all data generated in this remedial performance evaluation program. These DUSRs are included in ***Appendix N***, and associated raw is provided electronically in ***Appendix O.***

VOCs and metals were either not detected or were detected at concentrations below their respective SCOs, with the exception of three endpoint soil samples (EP-10, EP-13



EP-10		
Soil Exceedances	Depth (feet bgs):	15'
Metals (mg/kg)	Commercial Use SCO	CONC.
Arsenic	16	20.9 J

EP-13			
Soil Exceedances		Depth (feet bgs):	15'
VOCs (ug/kg)	Protection of Groundwater SCO	Commercial Use SCO	CONC.
TCE	470	200,000	*640 D*

LEGEND

- BOUNDARY OF SITE
- B-20 COMPLETED SOIL BORING LOCATION
- EP-01 ENDPOINT SOIL SAMPLE LOCATION
- W-9 (10'-15') WASTE CHARACTERIZATION SOIL SAMPLE LOCATION (COMPOSITE)
- MW-205 EXISTING GROUNDWATER MONITORING WELL
- B-17 COMPLETED GEOPROBE SOIL BORING
- B-9 COMPLETED GEOTECHNICAL SOIL BORING
- D1 SOIL MANAGEMENT UNIT

NOTES:

DATA BOXES DEPICT SOIL CONCENTRATIONS ABOVE NYSDEC PART 375 PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVES (SCOs) (FOR CHLORINATED VOCs) AND/OR COMMERCIAL USE SCOs.

SOIL UNITS ARE MICROGRAMS PER KILOGRAM (ug/kg) FOR VOCs AND MILLIGRAMS PER KILOGRAM (mg/kg) FOR METALS.

D: RESULT REPORTED FROM A SECONDARY DILUTION

J: ESTIMATED VALUE

CONCENTRATION EXCEEDS NYSDEC PART 375 PROTECTION OF GROUNDWATER SCO

CONCENTRATION EXCEEDS NYSDEC PART 375 COMMERCIAL USE SCO

0 30'

SCALE IN INCHES

D&B ENGINEERS AND ARCHITECTS, P.C.

FORMER LEVCO METALS FINISHING PROPERTY

SAMPLE ENDPOINT MAP

SCALE:1"=30'-0"

FIGURE 4-5

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and EP-32). ***Table 4-4*** provided below summarizes the endpoint soil samples and VOCs and metals identified at concentrations exceeding the Commercial Use SCOs and Protection of Groundwater SCOs (for chlorinated VOCs).

Table 4-4

Summary of Endpoint Sample Exceedances

Sample	Date	Constituent	Concentration	Protection of GW SCO	Commercial Use SCO
EP-10	12/18/2017	Arsenic	20.9 J mg/kg	N/A	16 mg/kg
EP-13	04/03/2018	Trichloroethene	***640 D ug/kg***	470 ug/kg	200,000 ug/kg

Notes:
ug/kg: Micrograms per kilogram
mg/kg: Milligrams per kilogram
D: Reported from a secondary dilution
J: Estimated value
N/A: Not Applicable

Exceeds Protection of GW SCO
Exceeds Commercial Use SCO

It should be noted that endpoint sample EP-32 exhibited TCE at a concentration of 660 ug/kg, above the Protection of Groundwater SCO of 470 ug/kg, and cadmium at a concentration of 22.3 mg/kg, above the Commercial Use SCO of 9.3 mg/kg. At NYSDEC's request, a 10-foot by 10-foot area surrounding EP-32 was excavated an additional 2 feet to 17 feet bgs. Following the additional excavation, endpoint sample EP-32A was collected on March 12, 2018. No exceedances of Commercial Use SCOs, or Protection of Groundwater SCOs for chlorinated VOCs were observed in EP-32A.

It should be noted that a 10-foot by 10-foot area located in eastern portion of the Site and in the vicinity of the former sump was excavated to a depth of 17 feet below grade due to an elevated concentration of TCE detected in soil sample B-3 collected as part of the Pre-Construction Soil Characterization Investigation. Following the additional excavation, endpoint soil sample EP-B3 was collected at the location of the B-3 hot-spot

for documentation purposes, as per NYSDEC request. No exceedances of Commercial Use SCOs, or Protection of Groundwater SCOs for chlorinated VOCs were observed.

In addition, a 9-foot strip of soil was left in place for structural reasons along the south side of the Site as shown on ***Figure 4-5***. For documentation purposes, 3 soil borings were completed in this area upon NYSDEC request, and the results are discussed in Section 4.10.

Note that additional excavation was not feasible due to ongoing construction activities in the areas of EP-10 and EP-13. Therefore, NYSDEC did not require additional excavation in these areas. This contamination remains in place below the new on-site building, as discussed in Section 4.6.

4.5 Imported Backfill

Portions of the areas excavated as part of the remediation activities were backfilled with RCA as backfill/base layer for the building foundation, including below the foundation floor and behind the below-grade walls. The RCA utilized for backfilling originated from Rockrete Recycling Corp., a recycling facility located at 341 Trumbull Street in Elizabeth, New Jersey and Richmond Recycling Corp., a recycling facility located at 1900 South Avenue, Staten Island, New York. No clean fill or top soil was utilized as part of this project. A letter detailing the sources of the RCA and associated particle size distribution reports are provided in ***Appendix P*** of this document, as well as related correspondence with NYSDEC. Approximately 980 cubic yards of RCA was utilized throughout the Site. It should be noted that this RCA meets the requirements for import without chemical testing in accordance with DER-10 Section 5.4(e)5.

4.6 Contamination Remaining at the Site

The following discussion summarizes the remaining contamination identified at the Site based on the endpoint soil samples collected following the remedial actions discussed above, as well as the most recent pre-remedial investigation activities conducted at the Site.

It should be noted that the completed redevelopment of the Site involved the excavation of Site soil to a depth of 15 feet below ground surface, excavation of an additional 2 feet of material from a 10-foot by 10-foot area surrounding previously completed soil boring B-3 and endpoint sample EP-32, and the construction of a new Stage building for film and television production (Stages O&N) with a footprint that covers the entirety of the Site and adjoining former Hellenic Service Station Site. The new building contains a below-grade parking garage with active ventilation. A vapor barrier/impermeable membrane was installed immediately below the building foundation to prevent water infiltration as well as prevent potential vapor intrusion into the Site building from any remaining VOCs at the Site.

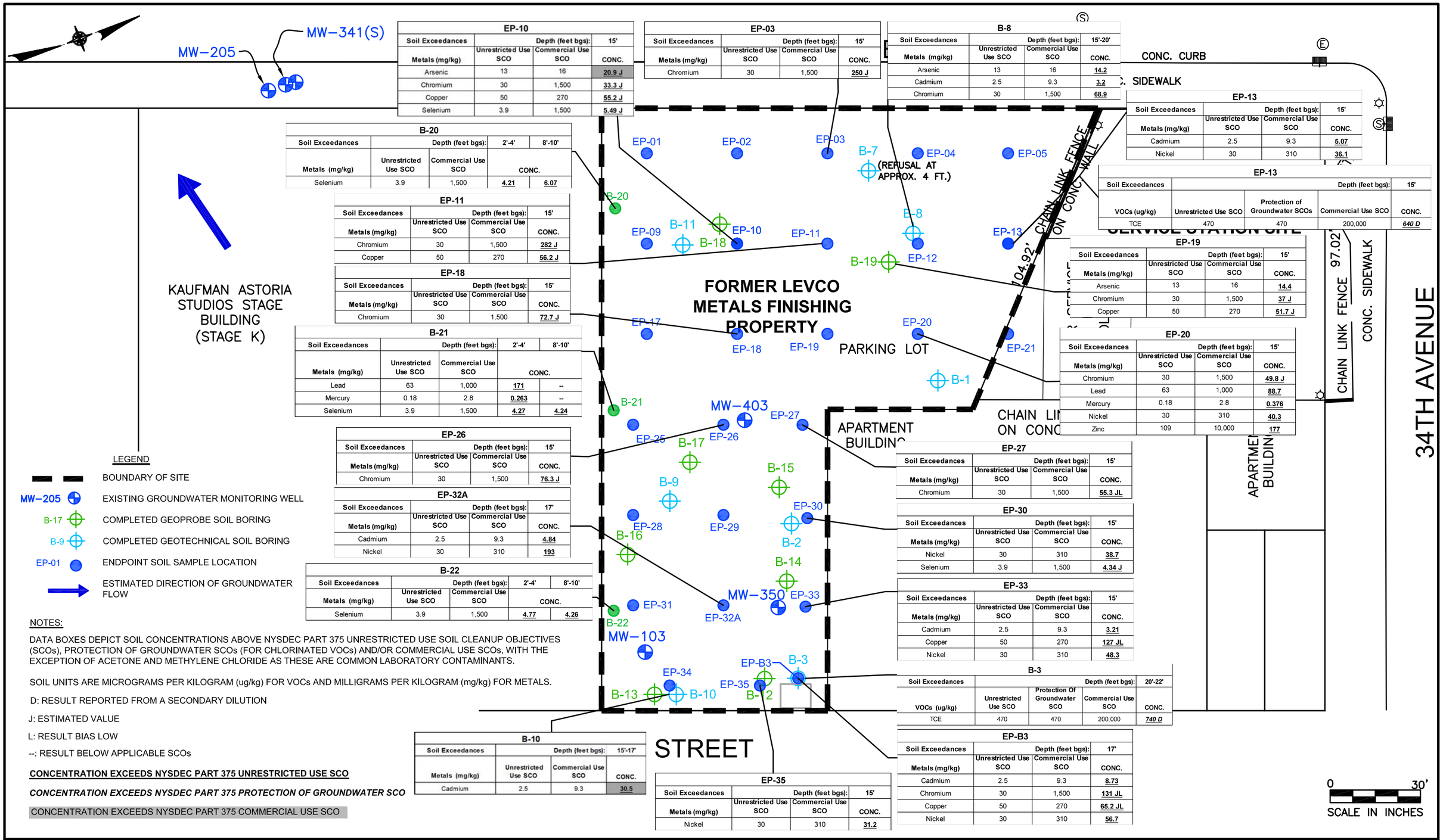
The most significant contamination at the Site was identified within the uppermost 15 feet of soil; therefore, the vast majority of soil contamination was addressed through the completion of these remedial excavation activities. In addition, the removal of this soil is anticipated to result in a decrease in contaminant concentrations in groundwater, as the soil contamination was considered a potential source of groundwater contamination. Several soil samples collected from depths greater than 15 feet below ground surface exhibited contaminants at concentrations exceeding the Part 375 Unrestricted Use and Commercial Use SCOs, as well as Protection of Groundwater SCOs for VOCs. In addition, groundwater samples collected as part of the pre-construction groundwater sampling program exhibited contaminants at concentrations exceeding their respective Class GA Standards. As such, this material is identified as “remaining contamination” at the Site and will be addressed by the ICs to be implemented at the Site.

The following discussion summarizes the areas "remaining contamination" at the Site for both soil and groundwater.

Soil

Soil samples collected at depths greater than 15 feet below ground surface as part of the Pre-Construction Soil Characterization Investigation exhibited contaminants at concentrations exceeding their respective Unrestricted Use SCOs and Commercial Use SCOs, as well as Protection of Groundwater SCOs for VOCs. As excavation activities were completed to a minimum depth of 15 feet below grade, all contaminants identified within the uppermost 15 feet of soil at the Site were removed from the Site. It should be noted that a 10-foot by 10-foot area located in eastern portion of the Site and in the vicinity of the former sump was excavated to a depth of 17 feet below grade due to an elevated concentration of TCE detected in soil sample B-3 collected as part of the Pre-Construction Soil Characterization Investigation. In addition, at NYSDEC request, a 10-foot by 10-foot area surrounding endpoint sample EP-32 was excavated an additional 2 feet to 17-feet bgs due to elevated concentrations of TCE detected in EP-32. Following the additional excavations, endpoint soil samples EP-B3 and EP-32A were collected and no exceedances of Commercial Use SCOs or Protection of Groundwater SCOs for chlorinated VOCs were observed. As such, this material was successfully removed as part of the remedial activities completed at the Site, and therefore, is excluded from the discussion below.

Soil sample locations and a summary of soil samples and contaminants exceeding their respective Unrestricted Use SCOs and Commercial Use SCOs, as well as Protection of Groundwater SCOs for chlorinated VOCs, are depicted on ***Figure 4-6***. In addition, ***Table 4-5*** provided below summarizes the soil samples and VOCs identified at concentrations exceeding the Unrestricted Use SCOs, Commercial Use SCOs and Protection of Groundwater SCOs for chlorinated VOCs. ***Table 4-6*** provided below summarizes the soil samples and metals identified at concentrations exceeding the Unrestricted Use SCOs and Commercial Use SCOs.



EP-10			
Soil Exceedances	Depth (feet bgs):		15'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Arsenic	13	16	20.9 J
Chromium	30	1,500	33.3 J
Copper	50	270	55.2 J
Selenium	3.9	1,500	5.49 J

EP-03			
Soil Exceedances	Depth (feet bgs):		15'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Chromium	30	1,500	250 J

B-8			
Soil Exceedances	Depth (feet bgs):		15'-20'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Arsenic	13	16	14.2
Cadmium	2.5	9.3	3.2
Chromium	30	1,500	68.9

EP-13			
Soil Exceedances	Depth (feet bgs):		15'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Cadmium	2.5	9.3	5.07
Nickel	30	310	36.1

EP-13				
Soil Exceedances	Depth (feet bgs):			15'
VOCs (ug/kg)	Unrestricted Use SCO	Protection of Groundwater SCOs	Commercial Use SCO	CONC.
TCE	470	470	200,000	*640 D*

B-20				
Soil Exceedances	Depth (feet bgs):		2'-4'	8'-10'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.	
Selenium	3.9	1,500	4.21	6.07

EP-11			
Soil Exceedances	Depth (feet bgs):		15'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Chromium	30	1,500	282 J
Copper	50	270	56.2 J

EP-18			
Soil Exceedances	Depth (feet bgs):		15'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Chromium	30	1,500	72.7 J

EP-19			
Soil Exceedances	Depth (feet bgs):		15'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Arsenic	13	16	14.4
Chromium	30	1,500	37 J
Copper	50	270	51.7 J

B-21				
Soil Exceedances	Depth (feet bgs):		2'-4'	8'-10'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.	
Lead	63	1,000	171	--
Mercury	0.18	2.8	0.263	--
Selenium	3.9	1,500	4.27	4.24

EP-20			
Soil Exceedances	Depth (feet bgs):		15'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Chromium	30	1,500	49.8 J
Lead	63	1,000	88.7
Mercury	0.18	2.8	0.376
Nickel	30	310	40.3
Zinc	109	10,000	177

EP-26			
Soil Exceedances	Depth (feet bgs):		15'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Chromium	30	1,500	76.3 J

EP-27			
Soil Exceedances	Depth (feet bgs):		15'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Chromium	30	1,500	55.3 JL

EP-32A			
Soil Exceedances	Depth (feet bgs):		17'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Cadmium	2.5	9.3	4.84
Nickel	30	310	193

EP-30			
Soil Exceedances	Depth (feet bgs):		15'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Nickel	30	310	38.7
Selenium	3.9	1,500	4.34 J

EP-33			
Soil Exceedances	Depth (feet bgs):		15'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Cadmium	2.5	9.3	3.21
Copper	50	270	127 JL
Nickel	30	310	48.3

B-22				
Soil Exceedances	Depth (feet bgs):		2'-4'	8'-10'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.	
Selenium	3.9	1,500	4.77	4.26

B-3				
Soil Exceedances	Depth (feet bgs):			20'-22'
VOCs (ug/kg)	Unrestricted Use SCO	Protection Of Groundwater SCO	Commercial Use SCO	CONC.
TCE	470	470	200,000	*740 D*

B-10			
Soil Exceedances	Depth (feet bgs):		15'-17'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Cadmium	2.5	9.3	30.5

EP-35			
Soil Exceedances	Depth (feet bgs):		15'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Nickel	30	310	31.2

EP-B3			
Soil Exceedances	Depth (feet bgs):		17'
Metals (mg/kg)	Unrestricted Use SCO	Commercial Use SCO	CONC.
Cadmium	2.5	9.3	8.73
Chromium	30	1,500	131 JL
Copper	50	270	65.2 JL
Nickel	30	310	56.7

LEGEND

- BOUNDARY OF SITE
- MW-205 — EXISTING GROUNDWATER MONITORING WELL
- B-17 — COMPLETED GEOPROBE SOIL BORING
- B-9 — COMPLETED GEOTECHNICAL SOIL BORING
- EP-01 — ENDPOINT SOIL SAMPLE LOCATION
- ESTIMATED DIRECTION OF GROUNDWATER FLOW

NOTES:

DATA BOXES DEPICT SOIL CONCENTRATIONS ABOVE NYSDEC PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES (SCOs), PROTECTION OF GROUNDWATER SCOs (FOR CHLORINATED VOCs) AND/OR COMMERCIAL USE SCOs, WITH THE EXCEPTION OF ACETONE AND METHYLENE CHLORIDE AS THESE ARE COMMON LABORATORY CONTAMINANTS.

SOIL UNITS ARE MICROGRAMS PER KILOGRAM (ug/kg) FOR VOCs AND MILLIGRAMS PER KILOGRAM (mg/kg) FOR METALS.

D: RESULT REPORTED FROM A SECONDARY DILUTION

J: ESTIMATED VALUE

L: RESULT BIAS LOW

--: RESULT BELOW APPLICABLE SCOs

CONCENTRATION EXCEEDS NYSDEC PART 375 UNRESTRICTED USE SCO

CONCENTRATION EXCEEDS NYSDEC PART 375 PROTECTION OF GROUNDWATER SCO

CONCENTRATION EXCEEDS NYSDEC PART 375 COMMERCIAL USE SCO

0 30'

SCALE IN INCHES

D&B ENGINEERS AND ARCHITECTS, P.C.

FORMER LEVCO METALS FINISHING PROPERTY

SCALE:1"=30'-0"

REMAINING CONTAMINATION - SUMMARY OF SOIL EXCEEDANCES

FIGURE 4-6

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Table 4-5

Summary of VOC Exceedances Remaining in Soil

Sample	Date	Constituent	Concentration (ug/kg)	Unrestricted Use SCO (ug/kg)	Protection of GW SCO (ug/kg)	Commercial Use SCO (ug/kg)
B-03 (20-22)	11/5/2015	Trichloroethene	***740 D***	470	470	200,000
EP-13	04/03/2018	Trichloroethene	***640 D***	470	470	200,000

Notes:

ug/kg: Micrograms per kilogram

D: Reported from a secondary dilution

Exceeds Unrestricted Use SCO

Exceeds Protection of GW SCO

Exceeds Commercial Use SCO

Table 4-6
Summary of Metals Exceedances Remaining in Soil

Sample	Date	Constituent	Concentration (mg/kg)	Unrestricted Use SCO (mg/kg)	Commercial Use SCO (mg/kg)
B-08 (15-20)	11/11/2015	Arsenic	**14.2**	13	16
		Cadmium	**3.2**	2.5	9.3
		Chromium	**68.9**	30	1,500
B-10 (15-17)	11/11/2015	Cadmium	**30.5**	2.5	9.3
B-20 (2-4)	2/7/2018	Selenium	**4.21**	3.9	1,500
B-20 (8-10)	2/7/2018	Selenium	**6.07**	3.9	1,500
B-21 (2-4)	2/7/2018	Lead	**171**	63	1,000
		Mercury	**0.263**	0.18	2.8
		Selenium	**4.27**	3.9	1,500
B-21 (8-10)	2/7/2018	Selenium	**4.24**	3.9	1,500
B-22 (2-4)	2/7/2018	Selenium	**4.77**	3.9	1,500
B-22 (8-10)	2/7/2018	Selenium	**4.26**	3.9	1,500
EP-B3	2/6/2018	Cadmium	**8.73**	2.5	9.3
		Chromium	**131 JL**	30	1,500
		Copper	**65.2 JL**	50	270
		Nickel	**56.7**	30	310
EP-03	4/3/2018	Chromium	**250 J**	30	1,500
EP-10	12/18/2017	Arsenic	**20.9 J**	13	16
		Chromium	**33.3 J**	30	1,500
		Copper	**55.2 J**	50	270
		Selenium	**5.49 J**	3.9	1,500
EP-11	4/3/2018	Chromium	**282 J**	30	1,500
		Copper	**56.2 J**	50	270
EP-13	4/3/2018	Cadmium	**5.07**	2.5	9.3
		Nickel	**36.1**	30	310
EP-18	12/18/2017	Chromium	**72.7 J**	30	1,500
EP-19	4/3/2018	Arsenic	**14.4**	13	16
		Chromium	**37 J**	30	1,500
		Copper	**51.7**	50	270
EP-20	4/3/2018	Chromium	**49.8 J**	30	1,500
		Lead	**88.7**	63	1,000
		Mercury	**0.376**	0.18	2.8
		Nickel	**40.3**	30	310
		Zinc	**177**	109	10,000
EP-26	12/18/2017	Chromium	**76.3 J**	30	1,500
EP-27	2/5/2018	Chromium	**55.3 JL**	30	1,500
EP-30	2/5/2018	Nickel	**38.7**	30	310
		Selenium	**4.34 J**	3.9	1,500
EP-32A	3/12/2018	Cadmium	**4.84**	2.5	9.3
		Nickel	**193**	30	310
EP-33	2/5/2018	Cadmium	**3.21**	2.5	9.3
		Copper	**127 JL**	50	270
		Nickel	**48.3**	30	310
EP-35	2/6/2018	Nickel	**31.2**	30	310

Notes:
mg/kg: Milligrams per kilogram
J: Estimated Value
L: Bias Low
Exceeds Unrestricted Use SCO
Exceeds Commercial Use SCO

Based on the above, limited soil contamination remains at the Site at a depth of 15 feet or greater below ground surface. This remaining contamination is limited to VOCs and metals and is primarily located in the vicinity of and downgradient of the former sump area. All VOC concentrations identified at concentrations exceeding the Unrestricted Use SCOs and Protection of Groundwater SCOs do not exceed the Commercial Use SCOs, which are the more appropriate SCGs based on current and future land uses at the Site. In addition, most of the exceeding concentrations are for acetone and methylene chloride which are common laboratory contaminants and may not be Site-related. Therefore, acetone and methylene chloride are not listed in ***Table 4-5*** and ***Figure 4-6***. With the exception of arsenic and cadmium each at one location, all of the above-listed metals were also detected at concentrations below their respective Commercial Use SCOs.

Groundwater

The following discussion focuses on the most recent groundwater sampling event completed as part of the pre-construction groundwater sampling event. Pre-construction groundwater sampling was conducted in March 2017 at seven existing groundwater monitoring wells (MW-331(S), MW-103, MW-350, MW-403, MW-341(S), MW-204 and MW-311(S)) in order to establish baseline or pre-remediation conditions with regard to VOC concentrations in groundwater. All monitoring well locations are depicted on ***Figure 1-2***.

As shown on ***Table 4-7*** below, VOCs were either not detected or were detected at concentrations below their respective Class GA Standards in the collected groundwater samples, with the exception of the following:

Table 4-7
Summary of VOC Exceedances Remaining in Groundwater

Sample	Date	Constituent	Concentration (ug/l)	Class GA Standard (ug/l)
MW-103	3/7/2017	Trichloroethene	30 D	5
MW-341 (S)	3/7/2017	Trans-1,2-Dichloroethene	6.2	5
		Trichloroethene	18	5
MW-350	3/7/2017	1,1,1-Trichloroethane	16	5
		Cis-1,2-Dichloroethylene	17	5
		Trichloroethene	200 D	5
MW-403	3/7/2017	Trichloroethene	27	5

Notes:
ug/l: Micrograms per liter
D: Reported from a secondary dilution

A figure depicting groundwater sample locations and VOC exceedances of the Class GA Standards in the collected groundwater samples is provided as ***Figure 4-7.***

Consistent with previous rounds of groundwater sampling, the highest VOC concentrations and greatest number of exceedances were detected in monitoring well MW-350, which is located immediately downgradient of the former sump area.

36TH STREET

CONC. CURB

CONC. SIDEWALK

75.41'

GATE

CHAIN LINK FENCE ON CONC. WALL

104.92'

GATE

97.02'

CHAIN LINK FENCE

CONC. SIDEWALK

CONC. CURB

34TH AVENUE

MW-205

MW-341(S)

MW-341 (S)		
Groundwater Exceedances		
VOCs (ug/l)	Class GA Standard	CONC.
Trans-1,2-Dichloroethene	5	6.2
TCE	5	18

KAUFMAN ASTORIA STUDIOS STAGE BUILDING (STAGE K)

MW-403		
Groundwater Exceedances		
VOCs (ug/l)	Class GA Standard	CONC.
TCE	5	27

MW-103		
Groundwater Exceedances		
VOCs (ug/l)	Class GA Standard	CONC.
TCE	5	30 D

WC-1 (0-5')

WC-1 (0-5')
WC-9 (5'-10')
WC-9 (10'-15')

B-7 (REFUSAL AT APPROX. 4 FT.)

WC-2 (0-5')
WC-10 (5'-10')
WC-10 (10'-15')

WC-2 (0-5')

B-11

B-18

B-8

B-19

FORMER HELLENIC SERVICE STATION SITE

FORMER LEVCO METALS FINISHING PROPERTY

WC-5 (0-5')

FORMER SERVICE STATION BUILDING (DEMOLISHED)

PARKING LOT

WC-4 (0-5')
WC-9 (5'-10')
WC-9 (10'-15')

WC-4 (0-5')

WC-5 (0-5')
WC-10 (5'-10')
WC-10 (10'-15')

B-1

MW-403

115.67'

CHAIN LINK FENCE ON CONC RET WALL

B-17

WC-7 (0-5')

B-15

B-9

WC-7 (0-5')
WC-13 (5'-10')
WC-13 (10'-15')

B-2

APARTMENT BUILDING

B-16

MW-350		
Groundwater Exceedances		
VOCs (ug/l)	Class GA Standard	CONC.
1,1,1-Trichloroethane	5	16
Cis-1,2-Dichloroethylene	5	17
TCE	5	200 D

B-14

MW-350

APARTMENT BUILDING

MW-103

WC-8 (0-5')
WC-13 (5'-10')
WC-13 (10'-15')

WC-8 (0-5')

B-3

B-13

B-10

B-12

37TH STREET

FORMER SUMP
(PRIMARY SOURCE AREA)

LEGEND

- BOUNDARY OF SITE
- MW-205 — EXISTING GROUNDWATER MONITORING WELL
- B-17 — COMPLETED GEOPROBE SOIL BORING
- B-9 — COMPLETED GEOTECHNICAL SOIL BORING
- WC-1 (0-5') — WASTE CHARACTERIZATION SOIL SAMPLE LOCATION (COMPOSITE)
- ESTIMATED DIRECTION OF GROUNDWATER FLOW

NOTES:

ALL ANALYTICAL RESULTS ARE FROM THE MOST RECENT ROUND OF GROUNDWATER SAMPLING COMPLETED ON MARCH 7, 2017 AS PART OF THE PRE-REMEDIATION GROUNDWATER SAMPLING EVENT.

DATA BOXES DEPICT GROUNDWATER CONCENTRATIONS ABOVE CLASS GA STANDARDS.

GROUNDWATER UNITS ARE MICROGRAMS PER LITER (ug/L)

TCE: TRICHLOROETHENE

D: RESULT REPORTED FROM A SECONDARY DILUTION

0 30'

SCALE IN INCHES

FORMER LEVCO METALS FINISHING PROPERTY

SCALE:1"=30'-0"

D&B ENGINEERS AND ARCHITECTS, P.C.

REMAINING CONTAMINATION - SUMMARY OF GROUNDWATER EXCEEDANCES

FIGURE 4-7

F:\3908\dwg\3908 - FER Fig 4-7.dwg, 6/18/2018 8:36:39 AM, Adobe PDF

Based on the pre-construction groundwater sampling event, analytical results from previous investigations and routine groundwater sampling, limited residual VOC contamination remains in groundwater at the Site, which is primarily located in the vicinity of and downgradient of the former sump area. As discussed in the SMP, post-construction groundwater monitoring activities will be undertaken to evaluate changes in groundwater contaminant concentrations.

Since contaminated soil and groundwater remains beneath the site after completion of the Remedial Action, Institutional Controls (ICs) are required to protect human health and the environment. These Institutional Controls are described in the following sections. Long-term management of these ICs and residual contamination will be performed under the SMP approved by the NYSDEC.

4.7 Site Cover

Exposure to remaining contamination in soil/fill at the Site is prevented by a concrete building slab 15 feet below the ground surface. The design cross sections for each cover type used on the Site and the location of each cover type to be built at the Site is included in ***Appendix Q***.

Following the completion of remedial excavation activities, an approximate 145,000 square foot four-story building will be constructed at the Site, which consists of two film and television production sound stages and related support space (Stages O&N), along with one level of below-grade parking. An active garage ventilation system will be installed for the below grade parking garage at the new Site building to remove automobile emissions. The garage ventilation system will be comprised of two exhaust fans on either side of the garage, with make-up coming through a louvered garage door. Both garage exhaust fans run continuously at a minimum set point and can ramp up based on activation of a CO detection system. The garage ventilation system is designed in accordance with all applicable NYC building codes.

As required by the NYSDEC-approved RAWP, a gas vapor barrier/impermeable membrane will be installed immediately below the building foundation as a precautionary measure to prevent water infiltration as well as prevent intrusion of vapors containing VOCs into the on-site building. The gas vapor barrier utilized at the Site, which may be exposed to contaminated vapors, was manufactured by Geo-Seal®, and is a triple-layer chemically-resistant composite system consisting of high density polyethylene (HDPE) and spray applied asphalt latex. This gas vapor barrier will be installed immediately below the below-grade parking area of the Site building and on the below-grade vertical foundation walls.

The Contractor was required to install the gas vapor barrier in accordance with the manufacturer's specifications. The specifications provide details on protecting the gas vapor barrier from damage and wear during application, as well as during the construction period. A third-party inspector (Engineering & Land Planning Associates, Inc. of High Bridge, NY) was retained by the owner for inspection and photographic documentation during Site preparation, installation and post-installation construction activities to confirm that the manufacturer's specifications were followed and the gas vapor barrier, once placed, was not disturbed. This inspection process ensured the integrity and term of the warranty of the product utilized. The inspection report provided by the third-party inspector is included in ***Appendix Q***. Specifications for the gas vapor barrier and detailed drawings of the redevelopment, which include the footprint of the proposed on-site building and corresponding extent of the gas vapor barrier installed at the Site is provided in ***Appendix Q***.

4.8 Engineering Controls

The remedy for the site did not require the construction of any engineering control (EC) systems.

4.9 Institutional Controls

The site remedy requires that a deed restriction be placed on the property to (1) implement, maintain and monitor the Engineering Controls, if any, (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to commercial or industrial uses only.

The deed restriction for the site was executed by the Department on June 15, 2017, and filed with the Queens County Clerk on June 15, 2017. The New York City Department of Finance Office of the City Registrar document ID number is 2017102300421001. A copy of the Declaration of Covenants and Restrictions and proof of filing is provided in ***Appendix D***.

4.10 Deviations from the Remedial Action Work Plan

Several changes were made to the remedial plan for the Site throughout remedial activities. The original remedial plan for the Site is detailed in the NYSDEC-approved RAWP, dated July 2010, and Pre-Construction Soil Characterization Report and Excavation Plan, dated March 2017 and revised September 2017. The changes to the remedial plan were necessitated by field conditions, and the details are as follows:

Drilling Piles

As the original plan to drive the pilings for the construction of the new on-site building was discontinued due to the resulting vibration impacting the adjoining building, drilling with water was necessary. This deviation to the RAWP was provided to the NYSDEC in a letter titled “Addendum to Excavation Plan for Drilling of Piles” dated August 14, 2017, and is included in **Appendix G**.

Groundwater waste and drill cuttings were generated during the completion of borings for the placement of building piles. Drilling water utilized to install the piles was conveyed along the ground through temporary trenches to an on-site collection basin and pumped into settlement (or frac) tanks before being recycled for continued drilling use. As drilling water could have potentially mixed with groundwater, lined trenches and a lined collection basin were used to ensure chlorinated VOCs detected in groundwater at the southern end of the Site (Grids S1, S4, S7 and S8) were not spread to non-contaminated areas of the Site. The trenches and collection basin were not lined for work conducted in Grids S2 or S5.

All soil/drill cuttings accumulated in the lined trenches and collection basin were stockpiled on-site separately from other soil. Soil/drill cuttings and excess drill water was sampled prior to disposal. The handling of these wastes is outlined in Sections 4.3.2 and 4.3.3.

Soil Adjacent to Stage K

Since issuance of the RAWP and Excavation Plan, it was determined that excavation of an approximately 9-foot wide strip of soil along the entire southern boundary of the Site was technically infeasible due to structural concerns with the adjacent Stage K building. The area of soil which has remained in place is depicted on ***Figure 4-1***. Note that other than removal of the previous asphalt cover and the top 2-feet of soil, no additional excavation of soil in this 9-foot wide area has occurred. This deviation to the RAWP was provided to the NYSDEC in a letter titled "Notification of Modification to the Remedial Action Work Plan" dated January 25, 2018 and is included in ***Appendix G***.

As shown on ***Figure 4-5***, three soil borings (B-20, B-21 and B-22) were completed in the 9-foot area upon NYSDEC request. Three soil samples were collected from each boring at depths of 2 to 4 feet, 8 to 10 feet and 14 to 16 feet below grade for analysis of VOCs, SVOCs and metals. The analytical results were compared to NYSDEC Commercial

Use SCOs, and the chlorinated VOCs detected in groundwater at the Site were also compared to NYSDEC Protection of Groundwater SCOs, including TCE.

VOCs were either not detected or were detected below Commercial Use SCOs and Protection of Groundwater SCOs in the selected soil samples from soil borings B-20, B-21 and B-22. SVOCs and metals were also not detected above Commercial Use SCOs.

Note the slab on grade first floor of the new on-site building extends and covers the area of soil which has remained in place. In addition, the vapor barrier was also installed over this area of soil.

Additional Excavation at Endpoint Soil Sample EP-32

As discussed in Section 4.4, TCE was detected in endpoint sample EP-32 at a concentration of 660 ug/kg, above the Protection of Groundwater SCO of 470 ug/kg. In addition, cadmium was detected at a concentration of 22.3 mg/kg, above the Commercial Use SCO of 9.3 mg/kg. At the direction of NYSDEC, additional excavation was completed at the EP-32 location similar to the B-3 TCE hot-spot. The excavation at EP-32 was increased in a 10 foot by 10 foot area around EP-32 to groundwater (an additional two feet in depth) to a total depth of approximately 17 feet below grade. This deviation to the RAWP was provided to the NYSDEC in a letter titled "Notification of Modification to the Remedial Action Work Plan" dated January 25, 2018 and is included in ***Appendix G***. Upon completion of the additional excavation, endpoint sample E-32A was collected to document the soil to be left in place. No exceedances of Commercial Use SCOs or Protection of Groundwater SCOs for chlorinated VOCs were observed. Endpoint sample locations EP-32 and EP-32A are shown on ***Figure 4-5***.